Inference After Variable Selection

by

Lasanthi C. R. Pelawa Watagoda

M.S., Southern Illinois University Carbondale, 2013

A Dissertation
Submitted in Partial Fulfillment of the Requirements for the
Doctor of Philosophy Degree

Department of Mathematics
in the Graduate School
Southern Illinois University Carbondale
July, 2017

AN ABSTRACT OF THE DISSERTATION OF

Lasanthi C. R. Pelawa Watagoda, for the Doctor of Philosophy degree in Mathematics, presented on TBA, at Southern Illinois University Carbondale.

TITLE: Inference after variable selection

MAJOR PROFESSOR: Prof. D. J. Olive

This thesis presents inference for the multiple linear regression model $Y = \beta_1 x_1 + \cdots + \beta_p x_p + e$ after model or variable selection, including prediction intervals for a future value of the response variable Y_f, and testing hypotheses with the bootstrap. If n is the sample size, most results are for n/p large, but prediction intervals are developed that increase in average length slowly as p increases for fixed n if the model is sparse: k predictors have nonzero coefficients β_i where n/k is large.

KEY WORDS: Bootstrap; Forward Selection; Lasso; Partial Least Squares; Prediction Interval; Principal Components Regression; Relaxed Lasso; Ridge Regression.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1

INTRODUCTION

Suppose that the response variable Y_i and at least one predictor variable $x_{i,j}$ are quantitative with $x_{i,1} \equiv 1$. Let $\boldsymbol{x}_i^T = (x_{i,1}, ..., x_{i,p}) = (1 \quad \boldsymbol{u}_i^T)$ and $\boldsymbol{\beta} = (\beta_1, ..., \beta_p)^T$ where β_1 corresponds to the intercept. Then the multiple linear regression (MLR) model is

$$Y_i = \beta_1 + x_{i,2}\beta_2 + \cdots + x_{i,p}\beta_p + e_i = \boldsymbol{x}_i^T\boldsymbol{\beta} + e_i \tag{1.1}$$

for $i = 1, ..., n$. This model is also called the full model. Here n is the sample size and the random variable e_i is the ith error. In matrix notation, these n equations become

$$\boldsymbol{Y} = \boldsymbol{X}\boldsymbol{\beta} + \boldsymbol{e}, \tag{1.2}$$

where $\boldsymbol{Y}$ is an $n \times 1$ vector of dependent variables, $\boldsymbol{X}$ is an $n \times p$ matrix of predictors, $\boldsymbol{\beta}$ is a $p \times 1$ vector of unknown coefficients, and $\boldsymbol{e}$ is an $n \times 1$ vector of unknown errors. The ith fitted value $\hat{Y}_i = \boldsymbol{x}_i^T\hat{\boldsymbol{\beta}}$ and the ith residual $r_i = Y_i - \hat{Y}_i$ where $\hat{\boldsymbol{\beta}}$ is an estimator of $\boldsymbol{\beta}$. Ordinary least squares (OLS) is often used for inference if n/p is large.

It is often convenient to use the centered response $\boldsymbol{Z} = \boldsymbol{Y} - \overline{\boldsymbol{Y}}$ where $\overline{\boldsymbol{Y}} = \overline{Y}\boldsymbol{1}$, and the $n \times (p-1)$ matrix of standardized nontrivial predictors $\boldsymbol{W} = (W_{ij})$. For $j = 1, ..., p-1$, let W_{ij} denote the $(j+1)$th variable standardized so that $\sum_{i=1}^n W_{ij} = 0$ and $\sum_{i=1}^n W_{ij}^2 = n$. Hence

$$W_{ij} = \frac{x_{i,j+1} - \overline{x}_{j+1}}{\tilde{\sigma}_{j+1}} \quad \text{where} \quad \tilde{\sigma}^2_{\mathrm{j+1}} = \frac{1}{\mathrm{n}} \sum_{\mathrm{i=1}}^{\mathrm{n}} (\mathrm{x_{i,j+1}} - \overline{\mathrm{x}}_{\mathrm{j+1}})^2.$$

Note that the sample correlation matrix of the nontrivial predictors $\boldsymbol{u}_i$ is

$$\boldsymbol{R_u} = \frac{\boldsymbol{W}^T\boldsymbol{W}}{n}.$$

Then regression through the origin is used for the model

$$\boldsymbol{Z} = \boldsymbol{W}\boldsymbol{\eta} + \boldsymbol{e} \tag{1.3}$$

where the vector of fitted values $\hat{\boldsymbol{Y}} = \overline{\boldsymbol{Y}} + \hat{\boldsymbol{Z}}$.

There are many alternative methods for estimating $\boldsymbol{\beta}$, including forward selection with OLS, principal component regression (PCR), partial least squares (PLS) due to Wold (1975), lasso due to Tibshirani (1996), relaxed lasso due to Meinshausen (2007), and ridge regression (RR): see Hoerl and Kennard (1970). These six methods produce M models and use a criterion to select the final model (e.g. C_p or 10-fold cross validation (CV)). The number of models M depends on the method. The full model is (approximately) fit with OLS. For one of the M models, some of the methods use $\hat{\boldsymbol{\eta}} = \boldsymbol{0}$ and fit the model $Y_i = \beta_1 + e_i$ with $\hat{Y} = \overline{Y}$. Lasso and ridge regression have a parameter λ. When $\lambda = 0$, the full OLS model is used. These methods also use a maximum value λ_M of λ and a grid of M λ values $0 \leq \lambda_1 < \lambda_2 < \cdots < \lambda_{M-1} < \lambda_M$ where often $\lambda_1 = 0$. For lasso, λ_M is the smallest value of λ such that $\hat{\boldsymbol{\eta}}_{\lambda_M} = \boldsymbol{0}$. Hence $\hat{\boldsymbol{\eta}}_{\lambda_i} \neq \boldsymbol{0}$ for $i < M$. For forward selection, PCR, and PLS, $M \leq p$. See James, Witten, Hastie, and Tibshirani (2013, ch. 6) for more details about these six methods.

1.1 INFERENCE FOR RIDGE REGRESSION AND LASSO

Consider choosing $\hat{\boldsymbol{\eta}}$ to minimize the criterion

$$Q(\boldsymbol{\eta}) = \frac{1}{a}(\boldsymbol{Z} - \boldsymbol{W}\boldsymbol{\eta})^T(\boldsymbol{Z} - \boldsymbol{W}\boldsymbol{\eta}) + \frac{\lambda_{1,n}}{a}\sum_{i=1}^{p-1}|\eta_i|^j \tag{1.4}$$

where $\lambda_{1,n} \geq 0$, $a > 0$, and $j > 0$ are known constants. Then $j = 2$ corresponds to ridge regression, $j = 1$ corresponds to lasso, and $a = 1, 2, n$, and $2n$ are common. The residual sum of squares $RSS(\boldsymbol{\eta}) = (\boldsymbol{Z} - \boldsymbol{W}\boldsymbol{\eta})^T(\boldsymbol{Z} - \boldsymbol{W}\boldsymbol{\eta})$, and $\lambda_{1,n} = 0$ corresponds to the OLS estimator $\hat{\boldsymbol{\eta}}_{OLS} = (\boldsymbol{W}^T\boldsymbol{W})^{-1}\boldsymbol{W}^T\boldsymbol{Z}$.

In the following three paragraphs, assume p is fixed. Knight and Fu (2000) prove i) that $\hat{\boldsymbol{\eta}}$ is a consistent estimator of $\boldsymbol{\eta}$ if $\lambda_{1,n} = o(n)$ so $\lambda_{1,n}/n \to 0$ as $n \to \infty$, ii) $\hat{\boldsymbol{\eta}}_{OLS}$ and $\hat{\boldsymbol{\eta}}$ are asymptotically equivalent if $\lambda_{1,n} \to \infty$ too slowly as $n \to \infty$, iii) $\hat{\boldsymbol{\eta}}$ is a $\sqrt{n}$ consistent estimator of $\boldsymbol{\eta}$ if $\lambda_{1,n} = O(\sqrt{n})$ (so $\lambda_{1,n}/\sqrt{n}$ is bounded), and iv) if $\lambda_{1,n}/\sqrt{n} \to \tau \geq 0$, then

$$\sqrt{n}(\hat{\boldsymbol{\eta}}_{RR} - \boldsymbol{\eta}) \xrightarrow{D} N_{p-1}(-\tau\boldsymbol{V}\boldsymbol{\eta}, \sigma^2\boldsymbol{V})$$

where

$$\boldsymbol{R}_{\boldsymbol{u}} = \frac{\boldsymbol{W}^T\boldsymbol{W}}{n} \xrightarrow{P} \boldsymbol{V}^{-1} \tag{1.5}$$

as $n \to \infty$. If $\tau = 0$, then OLS and ridge regression have the same limiting distribution. Note that $\boldsymbol{V}^{-1} = \boldsymbol{\rho}_{\boldsymbol{u}}$ if the $\boldsymbol{u}_i$ are a random sample from a population with a nonsingular population correlation matrix $\boldsymbol{\rho}_{\boldsymbol{u}}$. Under (1.5), if $\lambda_{1,n}/n \to 0$ then

$$\frac{\boldsymbol{W}^T\boldsymbol{W} + \lambda_{1,n}\boldsymbol{I}_{p-1}}{n} \xrightarrow{P} \boldsymbol{V}^{-1}, \quad \text{and} \quad \mathrm{n}(\boldsymbol{W}^{\mathrm{T}}\boldsymbol{W} + \lambda_{1,\mathrm{n}}\boldsymbol{I}_{\mathrm{p}-1})^{-1} \xrightarrow{\mathrm{P}} \boldsymbol{V}.$$

The following identity from Gunst and Mason (1980, p. 342) is useful for ridge regression inference:

$$\hat{\boldsymbol{\eta}}_{RR} = (\boldsymbol{W}^T\boldsymbol{W} + \lambda_{1,n}\boldsymbol{I}_{p-1})^{-1}\boldsymbol{W}^T\boldsymbol{Z} = (\boldsymbol{W}^T\boldsymbol{W} + \lambda_{1,n}\boldsymbol{I}_{p-1})^{-1}\boldsymbol{W}^T\boldsymbol{W}\hat{\boldsymbol{\eta}}_{OLS} = \boldsymbol{A}_n\hat{\boldsymbol{\eta}}_{OLS}$$

$$= [\boldsymbol{I}_{p-1} - \lambda_{1,n}(\boldsymbol{W}^T\boldsymbol{W} + \lambda_{1,n}\boldsymbol{I}_{p-1})^{-1}]\hat{\boldsymbol{\eta}}_{OLS} = \boldsymbol{B}_n\hat{\boldsymbol{\eta}}_{OLS}$$

since $\boldsymbol{A}_n - \boldsymbol{B}_n = \boldsymbol{0}$. If $\lambda_{1,n}/\sqrt{n} \to \tau \geq 0$, then

$$\sqrt{n}(\hat{\boldsymbol{\eta}}_{RR} - \boldsymbol{\eta}) = \sqrt{n}(\hat{\boldsymbol{\eta}}_{RR} - \hat{\boldsymbol{\eta}}_{OLS} + \hat{\boldsymbol{\eta}}_{OLS} - \boldsymbol{\eta}) =$$

$$\sqrt{n}(\hat{\boldsymbol{\eta}}_{OLS} - \boldsymbol{\eta}) - \sqrt{n}\frac{\lambda_{1,n}}{n} n(\boldsymbol{W}^T\boldsymbol{W} + \lambda_{1,n}\boldsymbol{I}_{p-1})^{-1}\hat{\boldsymbol{\eta}}_{OLS}$$

$$\xrightarrow{D} N_{p-1}(\boldsymbol{0}, \sigma^2\boldsymbol{V}) - \tau\boldsymbol{V}\boldsymbol{\eta} \sim N_{p-1}(-\tau\boldsymbol{V}\boldsymbol{\eta}, \sigma^2\boldsymbol{V}).$$

Theorem 1.1. *Let $\hat{\boldsymbol{\eta}}_L$ be the lasso estimator. Then*

$$\sqrt{n}(\hat{\boldsymbol{\eta}}_L - \boldsymbol{\eta}) \sim N_{p-1}\left(\frac{-\tau}{2}\boldsymbol{V}\boldsymbol{s}, \sigma^2\boldsymbol{V}\right).$$

where

$$\boldsymbol{R}\boldsymbol{u} = \frac{\boldsymbol{W}^T\boldsymbol{W}}{n} \xrightarrow{P} \boldsymbol{V}^{-1}$$

as $n \to \infty$. If $\tau = 0$, then OLS and lasso regression have the same limiting distribution.

Proof. The following identity from Efron and Hastie (2016, p. 308), for example, is useful for inference for the lasso estimator $\hat{\boldsymbol{\eta}}_L$:

$$\frac{-1}{n}\boldsymbol{W}^T(\boldsymbol{Z} - \boldsymbol{W}\hat{\boldsymbol{\eta}}_L) + \frac{\lambda_{1,n}}{2n}\boldsymbol{s}_n = \boldsymbol{0} \quad \text{or} \quad -\boldsymbol{W}^{\mathrm{T}}(\boldsymbol{Z} - \boldsymbol{W}\hat{\boldsymbol{\eta}}_{\mathrm{L}}) + \frac{\lambda_{1,\mathrm{n}}}{2}\boldsymbol{s}_{\mathrm{n}} = \boldsymbol{0}$$

where $s_{in} \in [-1, 1]$ and $s_{in} = \text{sign}(\hat{\eta}_{i,L})$ if $\hat{\eta}_{i,L} \neq 0$. Here $\text{sign}(\eta_i) = 1$ if $\eta_i > 1$ and $\text{sign}(\eta_i) = -1$ if $\eta_i < 1$. Note that $\boldsymbol{s}_n = \boldsymbol{s}_{n,\hat{\boldsymbol{\eta}}_L}$ depends on $\hat{\boldsymbol{\eta}}_L$. Thus

$$\hat{\boldsymbol{\eta}}_L = (\boldsymbol{W}^T\boldsymbol{W})^{-1}\boldsymbol{W}^T\boldsymbol{Z} - n(\boldsymbol{W}^T\boldsymbol{W})^{-1}\ \frac{\lambda_{1,n}}{2n}\ \boldsymbol{s}_n.$$

If $\lambda_{1,n}/\sqrt{n} \to \tau \geq 0$ and $\boldsymbol{s}_n \xrightarrow{P} \boldsymbol{s} = \boldsymbol{s}_{\boldsymbol{\eta}}$, then

$$\sqrt{n}(\hat{\boldsymbol{\eta}}_L - \boldsymbol{\eta}) = \sqrt{n}(\hat{\boldsymbol{\eta}}_L - \hat{\boldsymbol{\eta}}_{OLS} + \hat{\boldsymbol{\eta}}_{OLS} - \boldsymbol{\eta}) =$$

$$\sqrt{n}(\hat{\boldsymbol{\eta}}_{OLS} - \boldsymbol{\eta}) - \sqrt{n}\frac{\lambda_{1,n}}{2n} n(\boldsymbol{W}^T\boldsymbol{W})^{-1}\boldsymbol{s}_n \xrightarrow{D} N_{p-1}(\boldsymbol{0}, \sigma^2\boldsymbol{V}) - \frac{\tau}{2}\boldsymbol{V}\boldsymbol{s} \sim N_{p-1}\left(\frac{-\tau}{2}\boldsymbol{V}\boldsymbol{s}, \sigma^2\boldsymbol{V}\right).$$

$\square$

If none of the elements of $\boldsymbol{\eta}$ are zero, and if $\hat{\boldsymbol{\eta}}_L$ is a consistent estimator of $\boldsymbol{\eta}$, then $\boldsymbol{s}_n \xrightarrow{P} \boldsymbol{s} = \boldsymbol{s}_{\boldsymbol{\eta}}$. If $\lambda_{1,n}/\sqrt{n} \to 0$, then OLS and lasso are asymptotically equivalent even if $\boldsymbol{s}_n$ does not converge to a vector $\boldsymbol{s}$ as $n \to \infty$ since $\boldsymbol{s}_n$ is bounded.

The results in the above three paragraphs hold after model selection if $\lambda_{1,n}$ is replaced by $\hat{\lambda}_{1,n}$ and o and O are replaced by o_P and O_P, e.g. $\hat{\lambda}_{1,n} = o_P(\sqrt{n})$ makes lasso or ridge regression asymptotically equivalent to OLS. For model selection, the M values of λ are denoted by $\lambda_1, \lambda_2, ..., \lambda_M$ where $\lambda_i = \lambda_{1,n,i}$ depends on n for $i = 1, ..., M$. If λ_s corresponds to the model selected, then $\hat{\lambda}_{1,n} = \lambda_s$.

CHAPTER 2

VARIABLE SELECTION

Variable selection, also called subset or model selection, is the search for a subset of predictor variables that can be deleted without important loss of information. Following Olive and Hawkins (2005), a *model for variable selection* can be described by

$$\boldsymbol{x}^T\boldsymbol{\beta} = \boldsymbol{x}_S^T\boldsymbol{\beta}_S + \boldsymbol{x}_E^T\boldsymbol{\beta}_E = \boldsymbol{x}_S^T\boldsymbol{\beta}_S \tag{2.1}$$

where $\boldsymbol{x} = (\boldsymbol{x}_S^T, \boldsymbol{x}_E^T)^T$, $\boldsymbol{x}_S$ is a $k_S \times 1$ vector and $\boldsymbol{x}_E$ is a $(p - k_S - 1) \times 1$ vector. Given that $\boldsymbol{x}_S$ is in the model, $\boldsymbol{\beta}_E = \boldsymbol{0}$ and E denotes the subset of terms that can be eliminated given that the subset S is in the model. Let $\boldsymbol{x}_I$ be the vector of k terms from a candidate subset indexed by I, and let $\boldsymbol{x}_O$ be the vector of the remaining predictors (out of the candidate submodel). Suppose that S is a subset of I and that model (2.1) holds. Then

$$\boldsymbol{x}^T\boldsymbol{\beta} = \boldsymbol{x}_S^T\boldsymbol{\beta}_S = \boldsymbol{x}_S^T\boldsymbol{\beta}_S + \boldsymbol{x}_{I/S}^T\boldsymbol{\beta}_{(I/S)} + \boldsymbol{x}_O^T\boldsymbol{0} = \boldsymbol{x}_I^T\boldsymbol{\beta}_I \tag{2.2}$$

where $\boldsymbol{x}_{I/S}$ denotes the predictors in I that are not in S. Since this is true regardless of the values of the predictors, $\boldsymbol{\beta}_O = \boldsymbol{0}$ if $S \subseteq I$.

Forward selection forms a sequence of submodels $I_1, ..., I_M$ where I_j uses j predictors including the constant. Let I_1 use $x_1^* = x_1 \equiv 1$: the model has a constant but no nontrivial predictors. To form I_2, consider all models I with two predictors including x_1^*. Compute $Q_2(I) = SSE(I) = RSS(I) = \boldsymbol{r}^T(I)\boldsymbol{r}(I) = \sum_{i=1}^n r_i^2(I) = \sum_{i=1}^n (Y_i - \hat{Y}_i(I))^2$. Let I_2 minimize $Q_2(I)$ for the $p - 1$ models I that contain x_1^* and one other predictor. Denote the predictors in I_2 by x_1^*, x_2^*. In general, to form I_j consider all models I with j predictors including variables $x_1^*, ..., x_{j-1}^*$. Compute $Q_j(I) = \boldsymbol{r}^T(I)\boldsymbol{r}(I) = \sum_{i=1}^n r_i^2(I) = \sum_{i=1}^n (Y_i - \hat{Y}_i(I))^2$. Let I_j minimize $Q_j(I)$ for the $p - j + 1$ models I that contain $x_1^*, ..., x_{j-1}^*$ and one other predictor not already selected. Denote the predictors in I_j by $x_1^*, ..., x_j^*$. Continue in this manner for $j = 2, ..., M$. Often $M = \min(\lceil n/J \rceil, p)$ for some integer J such as $J = 5, 10$, or 20. Here $\lceil x \rceil$ is the smallest integer $\geq x$, e.g., $\lceil 7.7 \rceil = 8$.

2.1 CRITERIA FOR FINAL MODEL SELECTION

When there is a sequence of M submodels, the final submodel I_d needs to be selected. Let $\boldsymbol{x}_I$ and $\hat{\boldsymbol{\beta}}_I$ be $a \times 1$. Hence the candidate model contains a terms, including a constant. Suppose the e_i are independent and identically distributed (iid) with variance $V(e_i) = \sigma^2$. Then there are many criteria used to select the final submodel I_d. A simple method is to take the model that uses $d = M = \min(\lceil n/J \rceil, p)$ variables. If p is fixed, the method will use the full OLS model once $n/J \geq p$. For a given data set, p, n and $\hat{\sigma}^2$ act as constants, and a criterion below may add a constant or be divided by a constant without changing the subset I_{min} that minimizes the criterion.

2.1.1 Criterion when there is a good estimator for σ^2

Let criteria $C_S(I)$ have the form

$$C_S(I) = SSE(I) + aK_n\hat{\sigma}^2.$$

These criteria need a good estimator of σ^2. The criterion $C_p(I) = AIC_S(I)$ uses $K_n = 2$ while the $BIC_S(I)$ criterion uses $K_n = \log(n)$. Typically $\hat{\sigma}^2$ is the full OLS model

$$MSE = \sum_{i=1}^n \frac{r_i^2}{n-p}$$

when n/p is large. Then $\hat{\sigma}^2 = MSE$ is a $\sqrt{n}$ consistent estimator of σ^2 under mild conditions by Su and Cook (2012).

2.1.2 $AIC(I)$ and $BIC(I)$

It is hard to get a good estimator of σ^2 when n/p is not large. The following criterion are described in Burnham and Anderson (2004), but still need n/p large. AIC is due to Akaike (1973) and BIC to Schwarz (1978).

$$AIC(I) = n \log\left(\frac{SSE(I)}{n}\right) + 2a, \quad \text{and}$$

$$BIC(I) = n \log\left(\frac{SSE(I)}{n}\right) + a \log(n).$$

Let I_{min} be the submodel that minimizes the criterion. Following Seber and Lee (2003, p. 448) and Nishi (1984), the probability that model I_{min} from C_p or AIC underfits goes to zero as $n \to \infty$. If $\hat{\boldsymbol{\beta}}_I$ is $a \times 1$, form the $p \times 1$ vector $\hat{\boldsymbol{\beta}}_{I,0}$ from $\hat{\boldsymbol{\beta}}_I$ by adding 0s corresponding to the omitted variables. Since there are a finite number of regression models I that contain the true model, and each such model gives a $\sqrt{n}$ consistent estimator $\hat{\boldsymbol{\beta}}_{I,0}$ of $\boldsymbol{\beta}$, the probability that I_{min} picks one of these models goes to one as $n \to \infty$. Hence $\hat{\boldsymbol{\beta}}_{I_{min},0}$ is a $\sqrt{n}$ consistent estimator of $\boldsymbol{\beta}$ under model (2.1). Olive (2017b: $\oint$ 5.3.4, 2017c $\oint$ 3.4.1) showed that $\hat{\boldsymbol{\beta}}_{I_{min},0}$ is a consistent estimator.

2.1.3 *EBIC*

The EBIC criterion given in Luo and Chen (2012) may work when n/p is not large. Let $0 \leq \gamma \leq 1$ and $|I| = a \leq \min(n, p)$ if $\hat{\boldsymbol{\beta}}_I$ is $a \times 1$. We may use $a \leq \min(n/5, p)$. Then

$$EBIC(I) = n \log\left(\frac{SSE(I)}{n}\right) + a\log(n) + 2\gamma \log\left[\binom{p}{a}\right] = BIC(I) + 2\gamma \log\left[\binom{p}{a}\right].$$

This criterion can give good results if $p = p_n = O(n^k)$ and $\gamma > 1 - 1/(2k)$. Hence we will use $\gamma = 1$.

The above criteria can be applied to forward selection and relaxed lasso. The C_p criterion can also be applied to lasso. See, for example, Efron and Hastie (2016, pp. 221, 231).

2.2 R FUNCTIONS FOR VARIABLE SELECTION

Many methods for variable selection have been suggested. We will consider several *R* functions including i) forward selection with the minimum C_p criterion as computed with `regsubsets` function from the `leaps` library. The remaining methods often use 10 fold cross validation (CV) and include ii) principal components regression (PCR) with the `pcr` function from the `pls` library, iii) partial least squares (PLS) with the `plsr` function from the `pls` library, iv) ridge regression with the `cv.glmnet` function from the `glmnet` library, and v) lasso with the `cv.glmnet` function from the `glmnet` library.

2.3 OLS SUB MODEL THEOREM

Theorem 2.1.

Suppose the usual linear model $\boldsymbol{Y} = \boldsymbol{X\beta} + \boldsymbol{e}$ *, with* $E\boldsymbol{Y} = \boldsymbol{X\beta}$ *and* $E(\boldsymbol{e}) = \boldsymbol{0}$.

Then $Cov(\boldsymbol{Y}) = Cov(\boldsymbol{e}) = \sigma^2\boldsymbol{I}$.

If we break down $\boldsymbol{X}$ *and* $\boldsymbol{\beta}$ *as follows;*

$$\boldsymbol{X} = \begin{bmatrix} \boldsymbol{X}_I & \boldsymbol{X}_0 \end{bmatrix}, \boldsymbol{\beta} = \begin{bmatrix} \boldsymbol{\beta}_I \\ \boldsymbol{\beta}_0 \end{bmatrix},$$

$\boldsymbol{X\beta} = \boldsymbol{X}_I\boldsymbol{\beta}_I + \boldsymbol{X}_0\boldsymbol{\beta}_0$

where $\boldsymbol{\beta}_I = \left[\boldsymbol{X}_I^T\boldsymbol{X}_I\right]^{-1}\boldsymbol{X}_I^T\boldsymbol{Y} = \boldsymbol{AY}$, *then*

$E(\hat{\boldsymbol{\beta}}_I) = \boldsymbol{\beta}_I + \left[\boldsymbol{X}_I^T\boldsymbol{X}_I\right]^{-1}\boldsymbol{X}_I^T\boldsymbol{X}_0\boldsymbol{\beta}_0$ *and*

$Cov(\hat{\boldsymbol{\beta}}_I) = \sigma^2\left(\boldsymbol{X}_I^T\boldsymbol{X}_I\right)^{-1}$.

Proof. Assume this is an arbitorary submodel. When the submodel contains the set of predictors $\boldsymbol{S}$ then $\hat{\boldsymbol{\beta}}_I$ works well and estimates $\boldsymbol{\beta}_I$, but if I does not contain S then

$E(\hat{\boldsymbol{\beta}}_I) = E\left(\left[\boldsymbol{X}_I^T\boldsymbol{X}_I\right]^{-1}\boldsymbol{X}_I^T\boldsymbol{Y}\right)$

$= E\left(\boldsymbol{AY}\right) = \boldsymbol{A}E\left(\boldsymbol{Y}\right) = \boldsymbol{AX\beta}$

$= \boldsymbol{A}\left(\boldsymbol{X}_I\boldsymbol{\beta}_I + \boldsymbol{X}_0\boldsymbol{\beta}_0\right) = \left[\boldsymbol{X}_I^T\boldsymbol{X}_I\right]^{-1}\boldsymbol{X}_I^T\left(\boldsymbol{X}_I\boldsymbol{\beta}_I + \boldsymbol{X}_0\boldsymbol{\beta}_0\right) = \left[\boldsymbol{X}_I^T\boldsymbol{X}_I\right]^{-1}\boldsymbol{X}_I^T\boldsymbol{X}_I\boldsymbol{\beta}_I + \left[\boldsymbol{X}_I^T\boldsymbol{X}_I\right]^{-1}\boldsymbol{X}_I^T\boldsymbol{X}_0\boldsymbol{\beta}_0 = \boldsymbol{\beta}_I + \left[\boldsymbol{X}_I^T\boldsymbol{X}_I\right]^{-1}\boldsymbol{X}_I^T\boldsymbol{X}_0\boldsymbol{\beta}_0$.

When $\boldsymbol{\beta}_0 = 0$ then $E(\hat{\boldsymbol{\beta}}_I)$ is equal to $\hat{\boldsymbol{\beta}}_I$.

Now consider the $Cov(\hat{\boldsymbol{\beta}}_I)$:

$Cov(\hat{\boldsymbol{\beta}}_I) = Cov(\boldsymbol{AY}) = \boldsymbol{A}Cov(\boldsymbol{Y})\boldsymbol{A}^T = \boldsymbol{A}\sigma^2\boldsymbol{I}\boldsymbol{A}^T = \sigma^2\boldsymbol{AA}^T = \sigma^2\left(\left[\boldsymbol{X}_I^T\boldsymbol{X}_I\right]^{-1}\boldsymbol{X}_I^T\right)\left(\left[\boldsymbol{X}_I^T\boldsymbol{X}_I\right]^{-1}\boldsymbol{X}_I^T\right)^T = \sigma^2\left[\boldsymbol{X}_I^T\boldsymbol{X}_I\right]^{-1}\boldsymbol{X}_I^T\boldsymbol{X}_I\left(\left[\boldsymbol{X}_I^T\boldsymbol{X}_I\right]^{-1}\right)^T = \sigma^2\left(\left[\boldsymbol{X}_I^T\boldsymbol{X}_I\right]^T\right)^{-1} = \sigma^2\left(\boldsymbol{X}_I^T\boldsymbol{X}_I\right)^{-1}$.

$\square$

The above results shows why OLS does not work well if the submodel does not contains enough predictors.

CHAPTER 3

PREDICTION INTERVALS

Consider predicting a future test response variable Y_f given a $p \times 1$ vector of predictors $\boldsymbol{x}_f$ and training data $(\boldsymbol{x}_1, Y_1), ..., (\boldsymbol{x}_n, Y_n)$. A large sample $100(1-\delta)\%$ prediction interval (PI) has the form $[\hat{L}_n, \hat{U}_n]$ where $P[\hat{L}_n \leq Y_f \leq \hat{U}_n] \to 1 - \delta$ as the sample size $n \to \infty$.

3.1 SHORTH PI

The shorth(c) estimator is useful for making prediction intervals. Let $Z_{(1)}, ..., Z_{(n)}$ be the order statistics of $Z_1, ..., Z_n$. Then let the shortest closed interval containing at least c of the Z_i be

$$\mathrm{shorth(c)} = [\mathrm{Z_{(s)}}, \mathrm{Z_{(s+c-1)}}]. \tag{3.1}$$

Let

$$k_n = \lceil n(1-\delta) \rceil \tag{3.2}$$

where $\lceil x \rceil$ is the smallest integer $\geq x$, e.g., $\lceil 7.7 \rceil = 8$. Frey (2013) showed that for large $n\delta$ and iid data, the shorth(k_n) PI has maximum undercoverage $\approx 1.12\sqrt{\delta/n}$, and used the shorth($c$) estimator as the large sample $100(1-\delta)\%$ PI where

$$c = \min(n, \lceil n[1 - \delta + 1.12\sqrt{\delta/n}\ ]\ \rceil). \tag{3.3}$$

A problem with the prediction intervals that cover $\approx 100(1-\delta)\%$ of the training data cases Y_i (such as (3.1) using $c = k_n$ given by (3.2)), is that they have coverage lower than the nominal coverage of $1-\delta$ for moderate n. This result is not surprising since empirically statistical methods perform worse on test data. Increasing c will improve the coverage for moderate samples. Let df be the model degrees of freedom. Then empirically for many models, for $n \approx 20df$, prediction intervals such as (3.1) applied to iid data or pseudodata using $c = k_n$ tend to have undercoverage as high as 5%. The undercoverage decreases rapidly as n increases. Let $q_n = \min(1 - \delta + 0.05, 1 - \delta + p/n)$ for $\delta > 0.1$ and

$$q_n = \min(1 - \delta/2, 1 - \delta + 10\delta p/n), \quad \text{otherwise.} \tag{3.4}$$

If $1 - \delta < 0.999$ and $q_n < 1 - \delta + 0.001$, set $q_n = 1 - \delta$. Using

$$c = \lceil nq_n \rceil \tag{3.5}$$

decreased the undercoverage. For $p = 1$ and $n \geq 20$, the correction factors c/n for c given by (3.3) and (3.5) do not differ by much more than 3% for $0.01 \leq \delta \leq 0.5$.

3.2 OLIVE (2013) PI

Olive (2013) developed prediction intervals for models of the form $Y_i = m(\boldsymbol{x}_i) + e_i$, and variable selection models for (1.1) have this form, as noted by Olive (2017b). Let c be given by (3.5), and let

$$b_n = \left(1 + \frac{15}{n}\right)\sqrt{\frac{n + 2p}{n - p}}. \tag{3.6}$$

Compute the shorth(c) of the residuals $= (r_{(d)}, r_{(d+c-1)}) = (\tilde{\xi}_{\delta_1}, \tilde{\xi}_{1-\delta_2})$. Then a $100\ (1 - \delta)\%$ large sample PI for Y_f is

$$[\hat{m}(\boldsymbol{x}_f) + b_n\tilde{\xi}_{\delta_1}, \hat{m}(\boldsymbol{x}_f) + b_n\tilde{\xi}_{1-\delta_2}], \tag{3.7}$$

3.3 TWO NEW PREDICTION INTERVALS

3.3.1 The First new prediction Interval

Results from Hastie, Tibshirani, and Wainwright (2015, pp. 20, 296, ch. 6, ch. 11) suggest that lasso can perform well for sparse models: the subset S in (2.2) contains $k_S = a_S$ predictors where $a_S/n \to 0$ as $n \to \infty$. Let d be a crude estimate of the model degrees of freedom. With the exception of ridge regression, d is the number of "variables" used by the method. Forward selection, lasso, and relaxed lasso use variables $x_1^*, ..., x_d^*$ while PCR and PLS use variables that are linear combinations of the predictors $V_j = \boldsymbol{\gamma}_j^T \boldsymbol{x}$ for $j = 1, ..., d$. See Efron and Hastie (2016, pp. 221, 222, 231) and Tibshirani (2015) for lasso degrees of freedom.

For n/p large, Olive (2013) developed prediction intervals for models of the form $Y_i = m(\boldsymbol{x}_i) + e_i$, and variable selection models for (1.1) have this form, as noted by Olive (2017b). The first new PI, that can be useful even if n/p is not large, is defined below. The PI is similar to the Olive (2013) PI with p replaced by d, if d is not too large.

Let $q_n = \min(1 - \delta + 0.05, 1 - \delta + d/n)$ for $\delta > 0.1$ and

$$q_n = \min(1 - \delta/2, 1 - \delta + 10\delta d/n), \quad \text{otherwise.} \tag{3.8}$$

If $1 - \delta < 0.999$ and $q_n < 1 - \delta + 0.001$, set $q_n = 1 - \delta$. Let

$$c = \lceil n q_n \rceil, \tag{3.9}$$

and let

$$b_n = \left(1 + \frac{15}{n}\right) \sqrt{\frac{n + 2d}{n - d}} \tag{3.10}$$

if $d \leq 8n/9$, and

$$b_n = 5\left(1 + \frac{15}{n}\right),$$

otherwise. Compute the shorth(c) of the residuals $= [r_{(s)}, r_{(s+c-1)}] = [\tilde{\xi}_{\delta_1}, \tilde{\xi}_{1-\delta_2}]$. Then the first new 100 $(1-\delta)\%$ large sample PI for Y_f is

$$[\hat{m}(\boldsymbol{x}_f) + b_n \tilde{\xi}_{\delta_1}, \hat{m}(\boldsymbol{x}_f) + b_n \tilde{\xi}_{1-\delta_2}]. \tag{3.11}$$

3.3.2 The Second new prediction Interval (Validation PI)

The second new PI randomly divides the data into two half sets H and V where H has $n_H = \lceil n/2 \rceil$ of the cases and V has the remaining $n_V = n - n_H$ cases $i_1, ..., i_{n_V}$. The estimator $\hat{m}_H(\boldsymbol{x})$ is computed using the training data set H. Then the validation residuals $v_j = Y_{i_j} - \hat{m}_H(\boldsymbol{x}_{i_j})$ are computed for $j = 1, ..., n_V$ cases in the validation set V. Find the Frey PI $[v_{(s)}, v_{(s+c-1)}]$ of the validation residuals (replacing n in (3.3) by $n_V = n - n_H$). Then second new $100(1-\delta)\%$ large sample PI for Y_f is

$$[\hat{m}_H(\boldsymbol{x}_f) + v_{(s)}, \hat{m}_H(\boldsymbol{x}_f) + v_{(s+c-1)}]. \tag{3.12}$$

The PIs (3.11) and (3.12) are asymptotically equivalent if p is fixed and $n \to \infty$, but $\hat{m}_H$ has about half the efficiency of $\hat{m}$. When PI (3.11) has severe undercoverage because $\hat{m}$ is a poor estimator of m, it is expected that PI (3.12) may have coverage closer to the nominal coverage. For example, if $\hat{m}$ interpolates the data and $\hat{m}_H$ interpolates the training data from H, then the validation residuals will be huge. Hence PI (3.12) will be long compared to PI (3.11).

We can also motivate PI (3.12) by modifying the justification for the Lei, G'Sell, Rinaldo, Tibshirani, and Wasserman (2016) split conformal prediction interval $[\hat{m}_H(\boldsymbol{x}_f) -$

$a_q, \hat{m}_H(\boldsymbol{x}_f) + a_q]$ where a_q is an appropriate quantile of the absolute validation residuals. Suppose $(Y_i, \boldsymbol{x}_i)$ are iid for $i = 1, ..., n, n+1$ where $(Y_f, \boldsymbol{x}_f) = (Y_{n+1}, \boldsymbol{x}_{n+1})$. Compute $\hat{m}_H(\boldsymbol{x})$ from the cases in H. For example, get $\hat{\boldsymbol{\beta}}_H$ from the cases in H. Consider the validation residuals v_i for $i = 1, ..., n_V$ and the validation residual v_{n_V+1} for case $(Y_f, \boldsymbol{x}_f)$. Since these $n_V + 1$ cases are iid, the probability that v_t has rank j for $j = 1, ..., n_V + 1$ is $1/(n_V + 1)$ for each t, i.e., the ranks follow the discrete uniform distribution. Let $t = n_V + 1$ and let $v_{(i)}$ be the ordered residuals using $i = 1, ..., n_V$. That is, get the order statistics without using the unknown validation residual v_{n_V+1}. Then $v_{(i)}$ has rank i if $v_{(i)} < v_{n_V+1}$ but rank $i+1$ if $v_{(i)} > v_{n_V+1}$. Thus

$$P(Y_f \in [\hat{m}_H(\boldsymbol{x}_f) + v_{(k)}, \hat{m}_H(\boldsymbol{x}_f) + v_{(k+b-1)}]) = P(v_{(k)} \leq v_{n_V+1} \leq v_{(k+b-1)}) \geq$$

$$P(v_{n_V+1} \text{ has rank between } k+1 \text{ and } k+b-1 \text{ and there are no tied ranks}) \geq$$

$(b-1)/(n_V+1) \approx 1 - \delta$ if $b = \lceil (n_V + 1)(1-\delta) \rceil + 1$ and $k + b - 1 \leq n_V$. This probability statement holds for a fixed k such as $k = \lceil n_V \ \delta/2 \rceil$. The statement is not true when the shorth(b) estimator is used since the shortest interval using $k = s$ can have s change with the data set. That is, s is not fixed. Hence if PI's were made from J independent data sets, the PI's with fixed k would contain Y_f about $J(1-\delta)$ times, but this value would be smaller for the shorth(b) prediction intervals where s can change with the data set.

The above argument works if the estimator $\hat{m}(\boldsymbol{x})$ is "symmetric in the data." The assumption of iid cases is stronger than that of iid errors e_i. The split conformal PI can have good coverage, but PI (3.12) does not need the error distribution to be symmetric to be asymptotically optimal.

The PIs (3.11) and (3.12) can be used with $\hat{m}(\boldsymbol{x}) = \hat{Y}_f = \boldsymbol{x}_{I_d}^T \hat{\boldsymbol{\beta}}_{I_d}$ where I_d denotes the index of predictors selected from the model or variable selection method. The PIs (3.11) and (3.12) need the shorth of the residuals to be a consistent estimator of the population shorth of the error distribution. Olive and Hawkins (2003) show that if the $\|\boldsymbol{x}_i\|$ are bounded and $\hat{\boldsymbol{\beta}}$ is a consistent estimator of $\boldsymbol{\beta}$, then $\max_{i=1,\ldots,n} |r_i - e_i| \xrightarrow{P} 0$ and the sample quantiles of the residuals estimate the population quantiles of the error distribution. For OLS with fixed p, each submodel I produces a $\sqrt{n}$ consistent estimator provided that $S \subseteq I$.

The Cauchy Schwartz inequality says $|\boldsymbol{a}^T\boldsymbol{b}| \leq \|\boldsymbol{a}\| \ \ \|\boldsymbol{b}\|$. Suppose $\sqrt{n}(\hat{\boldsymbol{\beta}} - \boldsymbol{\beta}) = O_P(1)$ is bounded in probability. This will occur if $\sqrt{n}(\hat{\boldsymbol{\beta}} - \boldsymbol{\beta}) \xrightarrow{D} N_p(\boldsymbol{0}, \boldsymbol{\Sigma})$, e.g. if $\hat{\boldsymbol{\beta}}$ is the OLS estimator. Then

$$|r_i - e_i| = |Y_i - \boldsymbol{x}_i^T\hat{\boldsymbol{\beta}} - (Y_i - \boldsymbol{x}_i^T\boldsymbol{\beta})| = |\boldsymbol{x}_i^T(\hat{\boldsymbol{\beta}} - \boldsymbol{\beta})|.$$

Hence

$$\sqrt{n} \max_{i=1,\ldots,n} |r_i - e_i| \leq (\max_{i=1,\ldots,n} \|\boldsymbol{x}_i\|) \ \ \|\sqrt{n}(\hat{\boldsymbol{\beta}} - \boldsymbol{\beta})\| = O_P(1)$$

since $\max \|\boldsymbol{x}_i\| = O_P(1)$ or there is extrapolation. Hence OLS residuals behave well if the zero mean error distribution of the iid e_i has a finite variance σ^2.

Note that correction factors $b_n \to 1$ are used in large sample confidence intervals and tests if the limiting distribution is N(0,1) or χ^2_p, but a t_{d_n} or pF_{p,d_n} cutoff is used: $t_{d_n,1-\delta}/z_{1-\delta} \to 1$ and $pF_{p,d_n,1-\delta}/\chi^2_{p,1-\delta} \to 1$ if $d_n \to \infty$ as $n \to 1$. Using correction factors for prediction intervals and bootstrap confidence regions improves the performance for moderate sample size n.

3.3.3 PI after model selection

The PI (3.7) was used for the variable selection estimators.

Heuristically, the other methods consider a small number of models including the full OLS model, and models that beat the full OLS model for 10 fold CV likely fit the data well when p is fixed and $n \to \infty$. Hence under regularity conditions, the PI (3.7) is likely to perform well for the other methods.

As shown in simulations, lasso and ridge regression tended to have prediction intervals that were too long when $p \geq 20$, $a = p$ or $p-1$, and the predictor variables were correlated (with $\psi \geq 0.5$). As a possible remedy, consider 10 fold CV where the data set has been randomly divided into 10 groups of approximately equal size. For $j = 1, ..., 10$, compute the estimator when the jth group is left out and compute the PIs for the $Y_f = Y_i$ in the left out group j. After obtaining the n PIs, one for each Y_i, compute the proportion of times Y_i was in its PI and the average length of the PIs. Consider the λ_i where the proportion $\geq 1 - \delta$, and use λ_a that had the shortest average PI length as the λ for the variable selection estimator. This technique changes the CV criterion to average PI length, given that the observed coverage was at least as large as the nominal coverage.

CHAPTER 4

BOOTSTRAPPING HYPOTHESIS TESTS

We also want to use bootstrap tests. Consider testing $H_0 : \boldsymbol{\mu} = \boldsymbol{c}$ versus $H_1 : \boldsymbol{\mu} \neq \boldsymbol{c}$ where $\boldsymbol{c}$ is a known $r \times 1$ vector. Given training data $\boldsymbol{z}_1, ..., \boldsymbol{z}_n$, a large sample $100(1-\delta)\%$ confidence region for $\boldsymbol{\mu}$ is a set $\mathcal{A}_n$ such that $P(\boldsymbol{\mu} \in \mathcal{A}_n) \to 1-\delta$ as $n \to \infty$. Then reject H_0 if $\boldsymbol{c}$ is not in the confidence region $\mathcal{A}_n$. For example, let $\boldsymbol{\mu} = \boldsymbol{A\beta}$ where $\boldsymbol{\beta}$ is a $p \times 1$ vector of parameters, and $\boldsymbol{A}$ is a known full rank $r \times p$ matrix with $1 \leq r \leq p$.

To bootstrap a confidence region, Mahalanobis distances and prediction regions will be useful. Consider predicting a future test value $\boldsymbol{z}_f$, given past training data $\boldsymbol{z}_1, ..., \boldsymbol{z}_n$ where the $\boldsymbol{z}_i$ are $r \times 1$ random vectors. A *large sample* $100(1-\delta)\%$ *prediction region* is a set $\mathcal{A}_n$ such that $P(\boldsymbol{z}_f \in \mathcal{A}_n) \to 1-\delta$ as $n \to \infty$. Let the $r \times 1$ column vector T be a multivariate location estimator, and let the $r \times r$ symmetric positive definite matrix $\boldsymbol{C}$ be a dispersion estimator. Then the ith *squared sample Mahalanobis distance* is the scalar

$$D_i^2 = D_i^2(T, \boldsymbol{C}) = D^2_{\boldsymbol{z}_i}(T, \boldsymbol{C}) = (\boldsymbol{z}_i - T)^T \boldsymbol{C}^{-1}(\boldsymbol{z}_i - T) \tag{4.1}$$

for each observation $\boldsymbol{z}_i$. Notice that the Euclidean distance of $\boldsymbol{z}_i$ from the estimate of center T is $D_i(T, \boldsymbol{I}_r)$ where $\boldsymbol{I}_r$ is the $r \times r$ identity matrix. The classical Mahalanobis distance D_i uses $(T, \boldsymbol{C}) = (\overline{\boldsymbol{z}}, \boldsymbol{S})$, the sample mean and sample covariance matrix where

$$\overline{\boldsymbol{z}} = \frac{1}{n}\sum_{i=1}^{n} \boldsymbol{z}_i \quad \text{and} \quad \boldsymbol{S} = \frac{1}{\mathrm{n}-1}\sum_{\mathrm{i}=1}^{\mathrm{n}} (\boldsymbol{z}_{\mathrm{i}} - \overline{\boldsymbol{z}})(\boldsymbol{z}_{\mathrm{i}} - \overline{\boldsymbol{z}})^{\mathrm{T}}. \tag{4.2}$$

Let q_n and c be given by (3.4) and (3.5) with p replaced by r. Let $(T, \boldsymbol{C}) = (\overline{\boldsymbol{z}}, \boldsymbol{S})$, and let $D_{(U_n)}$ be the $100q_n$th sample quantile of the D_i. Then the Olive (2013) large sample

$100(1-\delta)\%$ nonparametric prediction region for a future value $\boldsymbol{z}_f$ given iid data $\boldsymbol{z}_1, ..., , \boldsymbol{z}_n$ is

$$\{\boldsymbol{z} : D^2_{\boldsymbol{z}}(\overline{\boldsymbol{z}}, \boldsymbol{S}) \leq D^2_{(U_n)}\}, \tag{4.3}$$

while the classical large sample $100(1-\delta)\%$ prediction region is

$$\{\boldsymbol{z} : D^2_{\boldsymbol{z}}(\overline{\boldsymbol{z}}, \boldsymbol{S}) \leq \chi^2_{r,1-\delta}\}. \tag{4.4}$$

The following theorem is proved in Olive (2017cde) and shows that the hyperellipsoid R_c centered at the statistic T_n is a large sample $100(1-\delta)\%$ confidence region for $\boldsymbol{\mu}$, but the hyperellipsoid centered at known $\boldsymbol{\mu}$ is a large sample $100(1-\delta)\%$ prediction region for a future value of the statistic $T_{f,n}$.

Theorem 4.1. *Let the $100(1-\delta)$th percentile $D^2_{1-\delta}$ be a continuity point of the distribution of D^2. Assume that $D^2_{\boldsymbol{\mu}}(T_n, \boldsymbol{\Sigma}_T) \xrightarrow{D} D^2$, $D^2_{\boldsymbol{\mu}}(T_n, \hat{\boldsymbol{\Sigma}}_T) \xrightarrow{D} D^2$, and $\hat{D}^2_{1-\delta} \xrightarrow{P} D^2_{1-\delta}$ where $P(D^2 \leq D^2_{1-\delta}) = 1-\delta$. i) Then $R_c = \{\boldsymbol{w} : D^2_{\boldsymbol{w}}(T_n, \hat{\boldsymbol{\Sigma}}_T) \leq \hat{D}^2_{1-\delta}\}$ is a large sample $100(1-\delta)\%$ confidence region for $\boldsymbol{\mu}$, and if $\boldsymbol{\mu}$ is known, then $R_p = \{\boldsymbol{w} : D^2_{\boldsymbol{w}}(\boldsymbol{\mu}, \hat{\boldsymbol{\Sigma}}_T) \leq \hat{D}^2_{1-\delta}\}$ is a large sample $100(1-\delta)\%$ prediction region for a future value of the statistic $T_{f,n}$. ii) Region R_c contains $\boldsymbol{\mu}$ iff region R_p contains T_n.*

Hence if there was an iid sample $T_{1,n}, ..., T_{B,n}$ of the statistic, the prediction region (4.3) for $T_{f,n}$ contains $E(T_n) = \boldsymbol{\mu}$ with asymptotic coverage $\geq 1-\delta$. Often the n is suppressed. To make the asymptotic coverage equal to $1-\delta$, use the large sample $100(1-\delta)\%$ confidence region $\{\boldsymbol{w} : D^2_{\boldsymbol{w}}(T_{1,n}, \boldsymbol{S}_T) \leq D^2_{(U_B)}\}$. The prediction region method bootstraps this procedure by using a bootstrap sample of the statistic $T^*_{1,n}, ..., T^*_{B,n}$. Let $\overline{T^*}$ and $\boldsymbol{S}^*_T$ be the sample mean and sample covariance matrix of $T^*_{1,n}, ..., T^*_{B,n}$. Centering the region at $T^*_{1,n}$ instead of $\overline{T}^*$ is not needed since the bootstrap sample is centered near T_n: the distribution of $T_n - \boldsymbol{\mu}$ is approximated by the distribution of $T^* - T_n$ or by the distribution of $T^* - \overline{T}^*$.

4.1 PREDICTION REGION METHOD

The prediction region method is simple. Let $\hat{\boldsymbol{\mu}}$ be a consistent estimator of $\boldsymbol{\mu}$ and make a bootstrap sample $\boldsymbol{w}_i = \hat{\boldsymbol{\mu}}_i^* - \boldsymbol{c}$ for $i = 1, ..., B$. Using the nonparametric prediction region (4.3) for the $\boldsymbol{w}_i$ as a large sample $100(1-\delta)\%$ confidence region, fail to reject H_0 if $\boldsymbol{0}$ is in the confidence region (if $D_{\boldsymbol{0}} \le D_{(U_B)}$), and reject H_0 otherwise. The method tends to work well in simulations if $\sqrt{n}(T_n - \boldsymbol{\mu}) \xrightarrow{D} \boldsymbol{z}$ where the random vector $\boldsymbol{z}$ has a nonsingular covariance matrix.

Following Bickel and Ren (2001), let the vector of parameters $\boldsymbol{\mu} = T(F)$, the statistic $T_n = T(F_n)$, and $T^* = T(F_n^*)$ where F is the cdf of iid $\boldsymbol{x}_1, ..., \boldsymbol{x}_n$, F_n is the empirical cdf, and F_n^* is the empirical cdf of $\boldsymbol{x}_1^*, ..., \boldsymbol{x}_n^*$, a sample from F_n using the nonparametric bootstrap. If $\sqrt{n}(F_n - F) \xrightarrow{D} \boldsymbol{z}_F$, a Gaussian random process, and if T is sufficiently smooth (Hadamard differentiable with a Hadamard derivative $\dot{T}(F)$), then $\sqrt{n}(T_n - \boldsymbol{\mu}) \xrightarrow{D} \boldsymbol{X}$ and $\sqrt{n}(T_i^* - \overline{T}^*) \xrightarrow{D} \boldsymbol{X}$ with $\boldsymbol{X} = \dot{T}(F)\boldsymbol{z}_F$. Olive (2017be) used these results to show that if $\boldsymbol{X} \sim N_r(\boldsymbol{0}, \boldsymbol{\Sigma}_T)$, then $\sqrt{n}(\overline{T}^* - T_n) \xrightarrow{D} \boldsymbol{0}$, $\sqrt{n}(\overline{T}^* - \boldsymbol{\mu}) \xrightarrow{D} \boldsymbol{X}$, and that the prediction region method large sample $100(1-\delta)\%$ confidence region for $\boldsymbol{\mu}$ is

$$\{\boldsymbol{w} : (\boldsymbol{w} - \overline{T}^*)^T [\boldsymbol{S}_T^*]^{-1} (\boldsymbol{w} - \overline{T}^*) \le D^2_{(U_B)}\} = \{\boldsymbol{w} : D^2_{\boldsymbol{w}}(\overline{T}^*, \boldsymbol{S}_T^*) \le D^2_{(U_B)}\} \tag{4.5}$$

where $D^2_{(U_B)}$ is computed from $D_i^2 = (T_i^* - \overline{T}^*)^T [\boldsymbol{S}_T^*]^{-1} (T_i^* - \overline{T}^*)$ for $i = 1, ..., B$. Note that the corresponding test for $H_0 : \boldsymbol{\mu} = \boldsymbol{\mu}_0$ rejects H_0 if $(\overline{T}^* - \boldsymbol{\mu}_0)^T [\boldsymbol{S}_T^*]^{-1} (\overline{T}^* - \boldsymbol{\mu}_0) > D^2_{(U_B)}$.

The prediction region method for testing $H_0 : \boldsymbol{\mu} = \boldsymbol{c}$ versus $H_1 : \boldsymbol{\mu} \ne \boldsymbol{c}$ is simple. Let

$\hat{\boldsymbol{\mu}}$ be a consistent estimator of $\boldsymbol{\mu}$ and make a bootstrap sample $\boldsymbol{w}_i = \hat{\boldsymbol{\mu}}_i^* - \boldsymbol{c}$ for $i = 1, ..., B$. Make the nonparametric prediction region (4.3) for the $\boldsymbol{w}_i$ and fail to reject H_0 if $\boldsymbol{0}$ is in the prediction region (if $D_{\boldsymbol{0}} \leq D_{(U_B)}$), reject H_0 otherwise.

The Bickel and Ren (2001) hypothesis testing method is equivalent to using confidence region (4.3) with $\overline{T}^*$ replaced by T_n and U_B replaced by $k_B = \lceil B(1-\delta) \rceil$. If region (4.3) or the Bickel and Ren (2001) region is a large sample $100(1-\delta)\%$ confidence region, then so is the other region if $\sqrt{n}(\overline{T}^* - T_n) \xrightarrow{D} \boldsymbol{0}$. Hadamard differentiability and asymptotic normality are sufficient conditions for both regions to be large sample confidence regions if $\boldsymbol{S}_T^* \xrightarrow{P} \boldsymbol{\Sigma}_T$, but Bickel and Ren (2001) showed that their method can work when Hadamard differentiability fails For $r = 1$, the percentile method uses an interval that contains $U_B \approx k_B = \lceil B(1-\delta) \rceil$ of the $T_{i,n}^*$ from a bootstrap sample $T_{1,n}^*, ..., T_{B,n}^*$ where the statistic T_n is an estimator of μ based on a sample of size n. Note that the squared Mahalanobis distance $D_\mu^2 = (\mu - \overline{T^*})^2 / S_T^{2*} \leq D_{(U_B)}^2$ is equivalent to $\mu \in [\overline{T^*} - S_T^* D_{(U_B)}, \overline{T^*} + S_T^* D_{(U_B)}]$, which is an interval centered at $\overline{T^*}$ just long enough to cover U_B of the T_i^*. Hence the prediction region method is a special case of the percentile method if $r = 1$. Efron (2014) uses a similar large sample $100(1-\delta)\%$ confidence interval assuming that T_n is asymptotically normal. The Frey (2013) shorth(c) interval applied to the $T_{i,n}^*$ is recommended since the shorth confidence interval can be much shorter than the Efron (2014) or prediction region method confidence intervals if $r = 1$. See Olive (2017e) for more information about the prediction region method.

Following Olive (2017ce), we describe the prediction region method for bootstrapping forward selection where 0s need to be added for omitted variables. Bootstrapping lasso and ridge regression is similar, but lasso already has the 0s and ridge regression usually does not produce 0 slope estimates. Suppose $n > 20p$. If $\hat{\boldsymbol{\beta}}_I$ is $(k \times 1) \times 1$, form $\hat{\boldsymbol{\beta}}_{I,0}$ from $\hat{\boldsymbol{\beta}}_I$ by adding 0s corresponding to the omitted variables. Then $\hat{\boldsymbol{\beta}}_{I,0}$ is a nonlinear estimator of $\boldsymbol{\beta}$, and the residual bootstrap method can be applied. Let $\hat{\boldsymbol{\beta}} = \hat{\boldsymbol{\beta}}_{I_{min},0}$ be formed from the forward selection model I_{min} that minimizes the C_p criterion. Instead of computing the least squares estimator from regressing $\boldsymbol{Y}_i^*$ on $\boldsymbol{X}$, perform variable selection on $\boldsymbol{Y}_i^*$ and $\boldsymbol{X}$, fit the model that minimizes the criterion, and add 0s corresponding to the omitted variables, resulting in estimators $\hat{\boldsymbol{\beta}}_1^*, ..., \hat{\boldsymbol{\beta}}_B^*$. Then test $\boldsymbol{\mu} = \boldsymbol{A\beta} = \boldsymbol{c}$ using the prediction region method for $r > 1$ and the shorth if $r = 1$.

4.2 RESIDUAL BOOTSTRAP

For models of form (1.1) with $n > 20p$, the residual bootstrap makes sense: the residuals from the full model are sampled with replacement resulting in a bootstrap sample $r_1^*, ..., r_n^*$ and $Y_i^* = \hat{Y}_i + r_i^*$ for $i = 1, ..., n$ are collected into a vector $\boldsymbol{Y}_j^*$ which is regressed on $\boldsymbol{X}$ to get $\hat{\boldsymbol{\beta}}_j^*$ for $j = 1, ..., n$. The nonparametric bootstrap selects n cases with replacement to form $(\boldsymbol{Y}_j^*, \boldsymbol{X}_j^*)$, and regresses $\boldsymbol{Y}_j^*$ on $\boldsymbol{X}_j^*$ to form $\hat{\boldsymbol{\beta}}_j^*$.

Note that if $S \subseteq I$, and $\boldsymbol{Y} = \boldsymbol{X}_I \boldsymbol{\beta}_I + \boldsymbol{e}_I$, then $\sqrt{n}(\hat{\boldsymbol{\beta}}_I - \boldsymbol{\beta}_I) \xrightarrow{D} N_{k+1}(\boldsymbol{0}, \sigma_I^2 \boldsymbol{W}_I)$ under mild regularity conditions where $n(\boldsymbol{X}_I^T \boldsymbol{X}_I)^{-1} \to \boldsymbol{W}_I$. Hence $\sqrt{n}(\hat{\boldsymbol{\beta}}_{I,0} - \boldsymbol{\beta}_c) \xrightarrow{D} N_p(\boldsymbol{0}, \sigma_I^2 \boldsymbol{W}_{I,0})$ where the $\boldsymbol{W}_{I,0}$ has a column and row of zeroes added for each variable not in I. Note that $\boldsymbol{W}_{I,0}$ is singular unless I corresponds to the full model. For example, if

$p = 3$ and model I uses a constant and x_3 with

$$\boldsymbol{W}_I = \begin{bmatrix} W_{11} & W_{12} \\ W_{21} & W_{22} \end{bmatrix}, \quad \text{then} \quad \boldsymbol{W}_{\mathrm{I},0} = \begin{bmatrix} W_{11} & 0 & W_{12} \\ 0 & 0 & 0 \\ W_{21} & 0 & W_{22} \end{bmatrix}.$$

Hence it is reasonable to conjecture that $\sqrt{n}(\hat{\boldsymbol{\beta}}_{I_{min},0} - \boldsymbol{\beta}_c) \xrightarrow{D} \boldsymbol{X}$ where

$$\boldsymbol{X} = \sum_{i=1}^{K} \pi_i N_p(\boldsymbol{0}, \sigma^2_{I_i} \boldsymbol{W}_{I_i,0}),$$

$0 \leq \pi_i \leq 1$, $\sum_{i=1}^{K} \pi_i = 1$, and K is the number of subsets I_i that contain S. Note that the limiting distribution is not an elliptically contoured distribution (unless the full model has $\pi_k = 1$) since the probability of a 0 would be 0.

Prediction intervals and regions can have higher than the nominal coverage $1-\delta$ if the distribution is discrete or a mixture of a discrete distribution and some other distribution. In particular, coverage can be high if the $\boldsymbol{w}_i$ distribution is a mixture of a point mass at $\boldsymbol{0}$ and the method checks whether $\boldsymbol{0}$ is in the prediction region. Such a mixture often occurs for forward selection methods and lasso. The bootstrap sample for the $W_i = \hat{\boldsymbol{\beta}}^*_{ij}$ can contain many zeroes and be highly skewed if the jth predictor is weak. Then the computer program may fail because $\boldsymbol{S_w}$ is singular, but if all or nearly all of the $\hat{\boldsymbol{\beta}}^*_{ij} = 0$, then there is strong evidence that the jth predictor is not needed given that the other predictors are in the variable selection method.

As an extreme simulation case, suppose $\hat{\boldsymbol{\beta}}^*_{ij} = 0$ for $i = 1, ..., B$ and for each run in the simulation. Consider testing $H_0 : \beta_j = 0$. Then regardless of the nominal coverage $1 - \delta$, the closed interval [0,0] will contain 0 for each run and the observed coverage will be $1 > 1 - \delta$. Using the open interval (0,0) would give observed coverage 0. Also intervals

$[0, b]$ and $[a, 0]$ correctly suggest failing to reject $\beta_j = 0$, while intervals $(0, b)$ and $(a, 0)$ incorrectly suggest rejecting $H_0 : \beta_j = 0$. Hence closed regions and intervals make sense.

Following Seber and Lee (2003, p. 448) and Nishi (1984), the probability that model I_{min} from C_p or AIC underfits goes to zero as $n \to \infty$. Since there are a finite number of regression models I that contain the true model, and each model gives a consistent estimator $\hat{\boldsymbol{\beta}}_{I,0}$ of $\boldsymbol{\beta}$, the probability that I_{min} picks one of these models goes to one as $n \to \infty$. Hence $\hat{\boldsymbol{\beta}}_{I_{min},0}$ is a consistent estimator of $\boldsymbol{\beta}$ under model (2.2).

Note that when performing the prediction region method for lasso and ridge regression, we use the residual bootstrap where the residuals are from the full OLS model. Efron (1982, p. 36) notes that for the OLS residual bootstrap for the full OLS model, $E[\hat{\boldsymbol{\beta}}^*_j] = \hat{\boldsymbol{\beta}}_{OLS}$, and the sample covariance matrix of the $\hat{\boldsymbol{\beta}}^*_j$ is estimating the population bootstrap matrix $\frac{n-p}{n} MSE(\boldsymbol{X}^T \boldsymbol{X})^{-1}$ as $B \to \infty$. Hence the residual bootstrap standard error $SE(\hat{\beta}_i) \approx \sqrt{\frac{n-p}{n}}\, SE(\hat{\beta}_{i,OLS})$. Here the expectations are with respect to the bootstrap distribution. Camponovo (2015) suggests that the nonparametric bootstrap does not work for lasso.

CHAPTER 5

EXAMPLES AND SIMULATIONS

5.1 EXAMPLE AND SIMULATIONS

5.1.1 Example

The Hebbler (1847) data was collected from $n = 26$ districts in Prussia in 1843. We will study the relationship between Y = the *number of women married to civilians* in the district with the predictors x_1 = constant, $x_2 = pop$ = the *population of the district in 1843*, $x_3 = mmen$ = the *number married civilian men* in the district, $x_4 = mmilmen$ = *number of married men in the military* in the district, and $x_5 = milwmn$ = the *number of women married to husbands in the military* in the district. Sometimes the person conducting the survey would not count a spouse if the spouse was not at home. Hence Y is highly correlated but not equal to x_3. Similarly, x_4 and x_5 are highly correlated but not equal. We expect that $Y = x_3 + e$ is a good model, but $n/p = 5.2$ is small.

Forward selection selected the model with the minimum C_p while the other methods used 10-fold CV. PLS and PCR used the OLS full model with PI length 2395.74, forward selection used a constant and *mmen* with PI length 2114.72, ridge regression had PI length 20336.58, lasso and relaxed lasso used a constant, *mmen*, and *pop* with lasso PI length 8482.62 and relaxed lasso PI length 2226.53. Figure 1 shows the response plots for forward selection, ridge regression, lasso, and relaxed lasso. The plots for PLS=PCR=OLS full model were similar to those of forward selection and relaxed lasso. The plots suggest that the MLR model is appropriate since the plotted points scatter about the identity line. The

90% pointwise prediction bands are also shown, and consist of two lines parallel to the identity line. These bands are very narrow in Figure 1 a) and d).

5.1.2 Simulation

For the simulations, for $u = 1, ..., n$, we generated $\boldsymbol{z}_u \sim N_{p-1}(\boldsymbol{0}, \boldsymbol{I})$ where the $m = p-1$ elements of the vector $\boldsymbol{z}_u$ are iid N(0,1). Let the $m \times m$ matrix $\boldsymbol{A} = (a_{ij})$ with $a_{ii} = 1$ and $a_{ij} = \psi$ where $0 \leq \psi < 1$ for $i \neq j$. Then the vector of predictors $\boldsymbol{w}_u = \boldsymbol{A}\boldsymbol{z}_u$ so that $Cov(\boldsymbol{w}) = \boldsymbol{\Sigma}_{\boldsymbol{w}} = \boldsymbol{A}\boldsymbol{A}^T = (\sigma_{ij})$ where the diagonal entries $\sigma_{ii} = [1 + (m-1)\psi^2]$ and the off diagonal entries $\sigma_{ij} = [2\psi + (m-2)\psi^2]$. Hence the correlations are $cor(x_i, x_j) = (2\psi + (m-2)\psi^2)/(1 + (m-1)\psi^2)$ for $i \neq j$ where x_i and x_j are nontrivial predictors. As ψ gets close to 1, the predictor vectors cluster about the line in the direction of $(1, ..., 1)^T$. The simulation used $\psi = 0, 0.5$, and 0.9. Then $Y_i = 1 + 1w_{i,1} + \cdots + 1w_{i,j} + e_i$ for $i = 1, ..., n$ with $a = k+1$ and $k = 1, p-2$, or $p-1$. Hence $\boldsymbol{\beta} = (1, .., 1, 0, ..., 0)^T$ with a ones and $p - a$ zeros. The zero mean errors e_i were iid of five types: i) N(0,1) errors, ii) t_3 errors, iii) EXP(1) - 1 errors, iv) uniform$(-1, 1)$ errors, and v) 0.9 N(0,1) + 0.1 N(0,100) errors.

The lengths of the asymptotically optimal 95% PIs are i) 3.92 = 2(1.96), ii) 6.365, iii) 2.996, iv) 1.90 = 2(0.95), and v) 13.490. The simulation used 5000 runs, so an observed coverage in (0.94, 0.96) gives no reason to doubt that the PI has the nominal coverage of 0.95. The simulations use $n = 10p, 20p$ and $100p$. Let a be the number of nonzero coefficients, including the constant, in $\boldsymbol{\beta}$. The coverage was often high for $n = 10p$ and $20p$, but close to the nominal coverage of 0.95 for $n = 100p$, where the average lengths were slightly longer than the asymptotically optimal lengths, except the lasso and ridge regression PIs were far too long when $\psi \geq 0.5$ and $a = p-1$ or $a = p$. Tables 5.1 -5.60

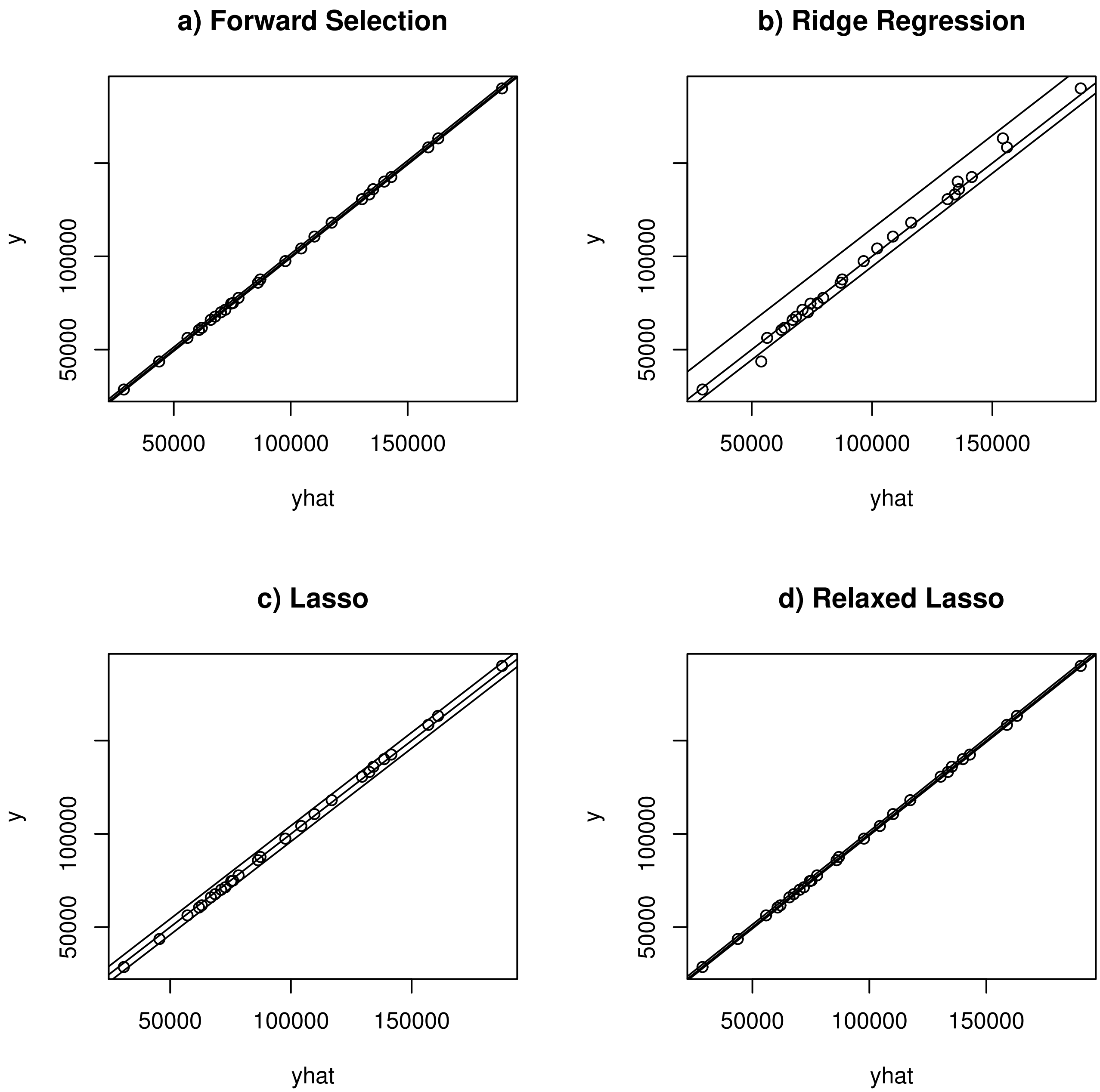

Figure 5.1. Marry Data Response Plots

used 10 fold CV except forward selection used C_p with PI (3.7). Tables 5.61 -5.300 used PI (3.11) with $d = \min(\lceil n/J \rceil, p)$.

5.1.3 Error type 1

Table 5.1. $p = 5$, *error type* $= 1$

			LASSO			RIDGE		
n	a	psi	coverage	length	penalty	coverage	length	penalty
50	1	0	0.9882	5.7506	0.1095	0.9876	5.6775	0.1661
		0.5	0.9880	5.7155	0.0535	0.9878	5.7767	0.1997
		0.9	0.9892	5.7663	0.0200	0.9886	5.8401	0.2092
	4	0	0.9866	5.6600	0.0318	0.9876	5.6825	0.1377
		0.5	0.9868	5.6629	0.0342	0.9890	5.8135	0.4034
		0.9	0.9888	5.7097	0.0408	0.9910	5.9038	0.6010
	5	0	0.9858	5.6417	0.0114	0.9874	5.6908	0.1467
		0.5	0.9862	5.6438	0.0357	0.9902	5.7452	0.5348
		0.9	0.9876	5.6858	0.0532	0.9906	5.9346	0.8009
100	1	0	0.9844	5.0979	0.0778	0.9832	5.0656	0.1131
		0.5	0.9850	5.0807	0.0376	0.9836	5.1385	0.1482
		0.9	0.9858	5.1034	0.0155	0.9862	5.1485	0.2017
	4	0	0.9820	5.0542	0.0216	0.9826	5.0766	0.1258
		0.5	0.9830	5.0581	0.0281	0.9840	5.1798	0.3944
		0.9	0.9834	5.0743	0.0397	0.9862	5.1988	0.6034
	5	0	0.9818	5.0474	0.0083	0.9824	5.0837	0.1334
		0.5	0.9822	5.0503	0.0342	0.9844	5.1157	0.5195
		0.9	0.9822	5.0649	0.0529	0.9860	5.2260	0.8043
500	1	0	0.9510	4.0813	0.0344	0.9510	4.0857	0.1096
		0.5	0.9514	4.0793	0.0169	0.9514	4.1343	0.1450
		0.9	0.9506	4.0826	0.0134	0.9520	4.1050	0.2031
	4	0	0.9484	4.0757	0.0113	0.9482	4.0935	0.1161
		0.5	0.9484	4.0782	0.0260	0.9482	4.1643	0.3955
		0.9	0.9490	4.0809	0.0400	0.9490	4.1447	0.6080
	5	0	0.9488	4.0748	0.0074	0.9492	4.0956	0.1190
		0.5	0.9488	4.0771	0.0343	0.9492	4.1163	0.5206
		0.9	0.9486	4.0824	0.0533	0.9502	4.1631	0.8105

Table 5.2. $p = 5$, *error type* $= 1$

			PLS			PCR		
n	a	psi	coverage	length	penalty	coverage	length	penalty
50	1	0	0.9854	5.6385	0.7488	0.9842	5.8770	0.3500
		0.5	0.9860	5.6405	0.9196	0.9868	5.7827	0.7340
		0.9	0.9854	5.6434	1.7406	0.9878	5.7349	1.5420
	4	0	0.9852	5.6383	0.6070	0.9848	6.1056	0.2606
		0.5	0.9856	5.6418	0.8962	0.9872	5.7881	0.7468
		0.9	0.9854	5.6443	1.7418	0.9886	5.7355	1.5308
	5	0	0.9854	5.6378	0.5732	0.9828	6.2429	0.2792
		0.5	0.9856	5.6433	1.7860	0.9876	5.7311	1.5724
		0.9	0.9852	5.6435	1.7828	0.9882	5.7296	1.5860
100	1	0	0.9818	5.0468	0.5580	0.9826	5.1911	0.2104
		0.5	0.9820	5.0469	0.5522	0.9820	5.1302	0.4648
		0.9	0.9818	5.0480	1.6984	0.9838	5.0919	1.4980
	4	0	0.9820	5.0467	0.5700	0.9814	5.3452	0.1608
		0.5	0.9818	5.0467	0.5422	0.9836	5.1363	0.4758
		0.9	0.9824	5.0475	1.7022	0.9834	5.0926	1.5078
	5	0	0.9818	5.0466	0.5370	0.9816	5.3863	0.1590
		0.5	0.9820	5.0480	1.7992	0.9840	5.0879	1.5982
		0.9	0.9818	5.0481	1.8020	0.9832	5.0880	1.6220
500	1	0	0.9492	4.0742	0.5430	0.9492	4.1051	0.0474
		0.5	0.9494	4.0742	0.3270	0.9486	4.0938	0.1132
		0.9	0.9488	4.0741	1.3090	0.9500	4.0835	1.1276
	4	0	0.9492	4.0742	0.5502	0.9482	4.1232	0.0246
		0.5	0.9492	4.0742	0.3132	0.9496	4.0970	0.1328
		0.9	0.9492	4.0742	1.3044	0.9500	4.0835	1.1314
	5	0	0.9492	4.0742	0.5288	0.9492	4.1468	0.0296
		0.5	0.9496	4.0742	1.8126	0.9502	4.0811	1.6176
		0.9	0.9496	4.0742	1.8058	0.9508	4.0810	1.6340

Table 5.3. $p = 5$, *error type* $= 1$

			Ii			I-Min		
n	a	psi	coverage	length	penalty	coverage	length	penalty
50	1	0	0.9882	5.7505	1.2858	0.9882	5.7180	1.5018
		0.5	0.9874	5.7500	1.2886	0.9868	5.7195	1.4882
		0.9	0.9878	5.7295	1.1714	0.9872	5.7069	1.3104
	4	0	0.9856	5.6764	0.0966	0.9858	5.6653	0.1714
		0.5	0.9866	5.6820	0.0376	0.9860	5.6684	0.1364
		0.9	0.9894	5.7542	-1.9134	0.9886	5.7300	-1.7362
	5	0	0.9854	5.6380	0.0000	0.9854	5.6380	0.0000
		0.5	0.9852	5.6512	-0.0962	0.9854	5.6430	-0.0454
		0.9	0.9856	5.7561	-2.6814	0.9860	5.7127	-2.3842
100	1	0	0.9858	5.0972	1.2546	0.9856	5.0833	1.4626
		0.5	0.9848	5.0959	1.2678	0.9844	5.0835	1.4686
		0.9	0.9840	5.0896	1.1480	0.9838	5.0815	1.2820
	4	0	0.9844	5.0649	0.0788	0.9840	5.0589	0.1520
		0.5	0.9844	5.0632	0.0812	0.9844	5.0580	0.1516
		0.9	0.9822	5.0970	-1.5394	0.9824	5.0792	-1.2490
	5	0	0.9818	5.0467	0.0000	0.9818	5.0467	0.0000
		0.5	0.9818	5.0467	-0.0002	0.9818	5.0467	0.0000
		0.9	0.9828	5.0850	-2.1236	0.9820	5.0746	-1.9622
500	1	0	0.9496	4.0820	1.2570	0.9498	4.0797	1.4776
		0.5	0.9502	4.0815	1.2780	0.9504	4.0791	1.4914
		0.9	0.9502	4.0820	1.1840	0.9506	4.0798	1.3966
	4	0	0.9502	4.0765	0.0850	0.9500	4.0756	0.1590
		0.5	0.9490	4.0767	0.0882	0.9488	4.0758	0.1610
		0.9	0.9486	4.0800	-0.3878	0.9486	4.0774	-0.1516
	5	0	0.9492	4.0742	0.0000	0.9492	4.0742	0.0000
		0.5	0.9492	4.0742	0.0000	0.9492	4.0742	0.0000
		0.9	0.9478	4.0793	-0.7274	0.9476	4.0766	-0.4800

Table 5.4. $p = 10$, *error type* $= 1$

			LASSO			RIDGE		
n	a	psi	coverage	length	penalty	coverage	length	penalty
100	1	0	0.9884	5.4461	0.1128	0.9836	5.3203	0.1583
		0.5	0.9876	5.4145	0.0402	0.9860	5.5306	0.2032
		0.9	0.9892	5.4659	0.0205	0.9910	5.5309	0.2996
	9	0	0.9828	5.2936	0.0130	0.9834	5.3527	0.1584
		0.5	0.9846	5.3291	0.0926	0.9866	5.6287	1.4070
		0.9	0.9856	5.4841	0.1563	0.9888	5.7184	2.3751
	10	0	0.9824	5.2896	0.0080	0.9832	5.3585	0.1634
		0.5	0.9832	5.3225	0.1041	0.9876	5.4681	1.5817
		0.9	0.9852	5.5211	0.1774	0.9900	5.7454	2.6748
200	1	0	0.9826	4.8221	0.0804	0.9820	4.7659	0.1113
		0.5	0.9824	4.8081	0.0282	0.9828	4.9321	0.1897
		0.9	0.9822	4.8304	0.0197	0.9836	4.8713	0.2995
	9	0	0.9796	4.7554	0.0101	0.9802	4.7976	0.1431
		0.5	0.9798	4.7822	0.0930	0.9830	5.0233	1.4137
		0.9	0.9816	4.9088	0.1573	0.9838	5.0357	2.3911
	10	0	0.9790	4.7539	0.0074	0.9796	4.7997	0.1469
		0.5	0.9796	4.7826	0.1045	0.9820	4.8718	1.5887
		0.9	0.9810	4.9487	0.1770	0.9844	5.0567	2.6899
1000	1	0	0.9550	4.0503	0.0361	0.9558	4.0489	0.1096
		0.5	0.9542	4.0488	0.0140	0.9526	4.1681	0.1899
		0.9	0.9540	4.0523	0.0197	0.9550	4.0734	0.2999
	9	0	0.9554	4.0390	0.0073	0.9546	4.0636	0.1230
		0.5	0.9558	4.0576	0.0929	0.9558	4.2358	1.4123
		0.9	0.9546	4.1698	0.1577	0.9544	4.2067	2.3966
	10	0	0.9552	4.0390	0.0073	0.9546	4.0647	0.1245
		0.5	0.9546	4.0616	0.1044	0.9546	4.1137	1.5871
		0.9	0.9544	4.2122	0.1774	0.9570	4.2250	2.6961

Table 5.5. $p = 10$, *error type* $= 1$

			PLS			PCR		
n	a	psi	coverage	length	penalty	coverage	length	penalty
100	1	0	0.9828	5.2875	4.6474	0.9822	5.3909	0.4702
		0.5	0.9830	5.2902	5.2654	0.9826	5.4084	2.0524
		0.9	0.9834	5.2963	6.8178	0.9864	5.4339	5.7218
	9	0	0.9826	5.2873	3.7566	0.9826	5.5023	0.1128
		0.5	0.9828	5.2894	5.3198	0.9838	5.4030	2.0242
		0.9	0.9838	5.2976	6.8126	0.9866	5.4317	5.7076
	10	0	0.9826	5.2872	3.7162	0.9826	5.5007	0.0998
		0.5	0.9836	5.2982	6.8630	0.9876	5.4293	5.8948
		0.9	0.9828	5.2974	6.8696	0.9874	5.4296	5.9612
200	1	0	0.9792	4.7526	4.5584	0.9792	4.7918	0.1616
		0.5	0.9794	4.7531	4.7764	0.9796	4.7909	0.8830
		0.9	0.9790	4.7550	6.7832	0.9824	4.8180	5.5524
	9	0	0.9790	4.7525	4.0604	0.9784	4.8446	0.0442
		0.5	0.9792	4.7526	4.7374	0.9788	4.7885	0.8588
		0.9	0.9786	4.7551	6.7756	0.9810	4.8198	5.5346
	10	0	0.9790	4.7526	4.0734	0.9780	4.8581	0.0452
		0.5	0.9792	4.7545	6.8928	0.9814	4.8154	5.9610
		0.9	0.9790	4.7544	6.8956	0.9810	4.8147	5.9848
1000	1	0	0.9548	4.0384	4.6970	0.9548	4.0423	0.0128
		0.5	0.9548	4.0383	4.2100	0.9550	4.0436	0.1088
		0.9	0.9556	4.0384	6.1100	0.9550	4.0505	3.8516
	9	0	0.9548	4.0383	4.5476	0.9546	4.0439	0.0018
		0.5	0.9548	4.0383	4.2138	0.9546	4.0434	0.1122
		0.9	0.9546	4.0384	6.1430	0.9552	4.0500	3.8570
	10	0	0.9546	4.0383	4.5270	0.9548	4.0459	0.0022
		0.5	0.9546	4.0384	6.9048	0.9562	4.0494	6.0390
		0.9	0.9548	4.0384	6.9100	0.9552	4.0490	6.0674

Table 5.6. $p = 10$, *error type* $= 1$

			Ii			I-Min		
n	a	psi	coverage	length	penalty	coverage	length	penalty
100	1	0	0.9882	5.4153	1.7604	0.9874	5.3799	2.2832
		0.5	0.9874	5.4108	1.8434	0.9874	5.3843	2.3040
		0.9	0.9868	5.4056	1.5272	0.9868	5.3796	1.9234
	9	0	0.9824	5.3027	0.0906	0.9822	5.2982	0.1662
		0.5	0.9824	5.3047	0.0826	0.9824	5.2986	0.1648
		0.9	0.9822	5.3947	-4.5546	0.9830	5.3584	-4.0566
	10	0	0.9828	5.2871	0.0000	0.9828	5.2871	0.0000
		0.5	0.9828	5.2876	-0.0064	0.9828	5.2872	-0.0028
		0.9	0.9822	5.3896	-5.2246	0.9822	5.3557	-4.7246
200	1	0	0.9806	4.8108	1.7230	0.9814	4.7954	2.2646
		0.5	0.9798	4.8068	1.8110	0.9812	4.7955	2.2814
		0.9	0.9812	4.8078	1.5274	0.9810	4.7966	1.9322
	9	0	0.9812	4.7601	0.0810	0.9806	4.7571	0.1586
		0.5	0.9798	4.7600	0.0814	0.9798	4.7572	0.1562
		0.9	0.9810	4.7976	-3.4344	0.9804	4.7809	-2.8882
	10	0	0.9790	4.7525	0.0000	0.9790	4.7525	0.0000
		0.5	0.9790	4.7525	0.0000	0.9790	4.7525	0.0000
		0.9	0.9792	4.7956	-3.9636	0.9802	4.7780	-3.3968
1000	1	0	0.9554	4.0485	1.7170	0.9546	4.0458	2.2628
		0.5	0.9554	4.0474	1.8002	0.9548	4.0451	2.2880
		0.9	0.9552	4.0475	1.7916	0.9540	4.0453	2.2736
	9	0	0.9542	4.0395	0.0880	0.9550	4.0391	0.1608
		0.5	0.9530	4.0395	0.0940	0.9538	4.0394	0.1628
		0.9	0.9544	4.0407	-0.2906	0.9546	4.0397	-0.0368
	10	0	0.9548	4.0383	0.0000	0.9548	4.0383	0.0000
		0.5	0.9548	4.0383	0.0000	0.9548	4.0383	0.0000
		0.9	0.9562	4.0399	-0.4550	0.9556	4.0388	-0.2402

Table 5.7. $p = 20$, *error type* $= 1$

			LASSO			RIDGE		
n	a	psi	coverage	length	penalty	coverage	length	penalty
200	1	0	0.9862	5.1549	0.1001	0.9782	4.9924	0.1565
		0.5	0.9862	5.1350	0.0257	0.9872	5.3618	0.2565
		0.9	0.9876	5.1765	0.0284	0.9880	5.2258	0.4599
	19	0	0.9766	4.9639	0.0077	0.9784	5.0421	0.1763
		0.5	0.9822	7.1374	0.9469	0.9886	7.1115	15.4018
		0.9	0.9874	12.1008	1.9016	0.9864	12.1859	41.4036
	20	0	0.9766	4.9636	0.0071	0.9792	5.0458	0.1793
		0.5	0.9826	7.5324	1.0472	0.9886	7.5123	19.4674
		0.9	0.9884	12.8327	2.0441	0.9870	12.7475	43.7748
400	1	0	0.9794	4.7830	0.0718	0.9754	4.7080	0.1102
		0.5	0.9794	4.7760	0.0197	0.9790	5.0068	0.2569
		0.9	0.9798	4.7931	0.0284	0.9804	4.8271	0.5059
	19	0	0.9752	4.6957	0.0072	0.9772	4.7487	0.1551
		0.5	0.9814	6.5197	0.9137	0.9840	6.4959	15.0130
		0.9	0.9844	11.1318	1.8824	0.9880	11.2281	41.4985
	20	0	0.9756	4.6959	0.0072	0.9760	4.7504	0.1571
		0.5	0.9822	6.8874	1.0179	0.9858	6.8815	19.2160
		0.9	0.9848	11.6681	1.9914	0.9866	11.7311	43.8077
2000	1	0	0.9590	4.0508	0.0322	0.9570	4.0469	0.1098
		0.5	0.9580	4.0521	0.0169	0.9546	4.2663	0.2572
		0.9	0.9590	4.0547	0.0285	0.9584	4.0750	0.5680
	19	0	0.9568	4.0380	0.0072	0.9542	4.0655	0.1282
		0.5	0.9518	5.4480	0.8817	0.9516	5.4220	14.5389
		0.9	0.9540	9.4723	1.8850	0.9530	9.4713	41.5668
	20	0	0.9568	4.0381	0.0073	0.9552	4.0662	0.1290
		0.5	0.9522	5.7692	0.9925	0.9544	5.7485	18.8624
		0.9	0.9538	9.9125	1.9897	0.9514	9.8951	43.8760

Table 5.8. $p = 20$, *error type* $= 1$

			PLS			PCR		
n	a	psi	coverage	length	penalty	coverage	length	penalty
200	1	0	0.9790	4.9622	14.2624	0.9800	4.9984	0.4948
		0.5	0.9786	4.9645	15.2648	0.9788	5.0535	3.7794
		0.9	0.9794	4.9811	16.9344	0.9876	5.1587	14.7684
	19	0	0.9794	4.9618	12.4752	0.9786	5.0106	0.0210
		0.5	0.9786	4.9646	15.2704	0.9796	5.0543	3.7614
		0.9	0.9804	4.9812	16.9414	0.9840	5.1556	14.7718
	20	0	0.9786	4.9617	12.4384	0.9792	5.0126	0.0222
		0.5	0.9802	4.9798	16.9692	0.9868	5.1504	15.2218
		0.9	0.9806	4.9800	16.9668	0.9860	5.1510	15.3116
400	1	0	0.9758	4.6933	14.1778	0.9756	4.7062	0.1490
		0.5	0.9750	4.6938	14.6326	0.9742	4.7151	1.2480
		0.9	0.9754	4.6976	16.9196	0.9808	4.7857	14.3778
	19	0	0.9758	4.6935	13.1034	0.9756	4.7086	0.0054
		0.5	0.9758	4.6937	14.5724	0.9758	4.7158	1.2108
		0.9	0.9748	4.6979	16.9160	0.9798	4.7852	14.4478
	20	0	0.9754	4.6935	13.0878	0.9754	4.7091	0.0066
		0.5	0.9750	4.6976	16.9778	0.9788	4.7809	15.3744
		0.9	0.9748	4.6975	16.9794	0.9794	4.7808	15.4614
2000	1	0	0.9566	4.0360	14.4946	0.9566	4.0369	0.0064
		0.5	0.9566	4.0360	13.8930	0.9566	4.0376	0.1066
		0.9	0.9570	4.0361	16.2020	0.9572	4.0501	9.3010
	19	0	0.9566	4.0360	13.9140	0.9566	4.0360	0.0000
		0.5	0.9566	4.0360	13.8766	0.9568	4.0375	0.0958
		0.9	0.9558	4.0361	16.1920	0.9582	4.0504	9.4936
	20	0	0.9566	4.0360	13.9086	0.9566	4.0360	0.0000
		0.5	0.9564	4.0362	16.9840	0.9572	4.0509	15.6098
		0.9	0.9566	4.0362	16.9826	0.9586	4.0509	15.6514

Table 5.9. $p = 20$, $error\ type = 1$

			Ii			I-Min		
n	a	psi	coverage	length	penalty	coverage	length	penalty
200	1	0	0.9838	5.0992	2.8208	0.9826	5.0672	3.8870
		0.5	0.9840	5.0961	2.9948	0.9834	5.0680	3.9056
		0.9	0.9842	5.0997	2.5710	0.9830	5.0739	3.4680
	19	0	0.9780	4.9706	0.0878	0.9786	4.9679	0.1612
		0.5	0.9778	4.9707	0.0908	0.9784	4.9691	0.1568
		0.9	0.9744	5.0624	-8.0654	0.9746	5.0263	-7.0706
	20	0	0.9788	4.9613	0.0000	0.9788	4.9613	0.0000
		0.5	0.9788	4.9613	0.0000	0.9788	4.9613	0.0000
		0.9	0.9768	5.0588	-8.6244	0.9758	5.0252	-7.6184
400	1	0	0.9780	4.7551	2.7666	0.9784	4.7393	3.8592
		0.5	0.9796	4.7540	2.9582	0.9782	4.7402	3.8902
		0.9	0.9798	4.7553	2.6970	0.9780	4.7415	3.6552
	19	0	0.9746	4.6967	0.0814	0.9746	4.6954	0.1560
		0.5	0.9750	4.6966	0.0790	0.9750	4.6958	0.1592
		0.9	0.9728	4.7318	-4.9272	0.9740	4.7161	-3.8920
	20	0	0.9756	4.6934	0.0000	0.9756	4.6934	0.0000
		0.5	0.9756	4.6934	0.0000	0.9756	4.6934	0.0000
		0.9	0.9720	4.7301	-5.2950	0.9728	4.7144	-4.2786
2000	1	0	0.9576	4.0465	2.7464	0.9568	4.0439	3.8028
		0.5	0.9574	4.0461	2.9296	0.9576	4.0437	3.8606
		0.9	0.9580	4.0459	2.9320	0.9576	4.0437	3.8682
	19	0	0.9564	4.0366	0.0924	0.9564	4.0365	0.1658
		0.5	0.9556	4.0367	0.0864	0.9558	4.0365	0.1638
		0.9	0.9554	4.0368	0.0470	0.9558	4.0366	0.1510
	20	0	0.9566	4.0360	0.0000	0.9566	4.0360	0.0000
		0.5	0.9566	4.0360	0.0000	0.9566	4.0360	0.0000
		0.9	0.9564	4.0361	-0.0456	0.9566	4.0360	-0.0146

Table 5.10. $p = 50$, *error type* $= 1$

			LASSO			RIDGE		
n	a	psi	coverage	length	penalty	coverage	length	penalty
500	1	0	0.9882	5.1527	0.0788	0.9812	4.9571	0.1557
		0.5	0.9890	5.1630	0.0260	0.9886	5.5414	0.3945
		0.9	0.9894	5.1823	0.0455	0.9898	5.2125	2.3158
	49	0	0.9780	4.9323	0.0069	0.9794	5.0308	0.1934
		0.5	0.9838	29.4716	5.4232	0.9878	29.1538	276.2661
		0.9	0.9884	51.5459	8.8077	0.9874	50.2634	492.4197
	50	0	0.9776	4.9325	0.0069	0.9784	5.0323	0.1946
		0.5	0.9840	30.0982	5.5362	0.9884	29.6323	282.0203
		0.9	0.9880	52.6117	8.9912	0.9868	51.3007	502.6784
1000	1	0	0.9796	4.7745	0.0559	0.9738	4.6880	0.1097
		0.5	0.9808	4.7813	0.0260	0.9784	5.1593	0.3954
		0.9	0.9798	4.7936	0.0456	0.9808	4.8177	2.3211
	49	0	0.9744	4.6794	0.0071	0.9770	4.7408	0.1668
		0.5	0.9848	27.1686	5.4327	0.9860	26.9734	276.7502
		0.9	0.9850	47.7251	8.8261	0.9852	46.5427	493.4512
	50	0	0.9746	4.6795	0.0071	0.9756	4.7414	0.1679
		0.5	0.9836	27.7414	5.5459	0.9862	27.4171	282.5143
		0.9	0.9850	48.7126	9.0100	0.9850	47.4989	503.7313
5000	1	0	0.9510	4.0554	0.0251	0.9480	4.0489	0.1097
		0.5	0.9514	4.0575	0.0260	0.9520	4.3926	0.3956
		0.9	0.9516	4.0617	0.0456	0.9506	4.0814	2.3223
	49	0	0.9498	4.0435	0.0072	0.9486	4.0726	0.1336
		0.5	0.9576	22.9195	5.4337	0.9582	22.8305	276.8005
		0.9	0.9588	40.4261	8.8322	0.9580	39.4116	493.7890
	50	0	0.9508	4.0437	0.0073	0.9486	4.0728	0.1339
		0.5	0.9606	23.3987	5.5469	0.9610	23.2087	282.5654
		0.9	0.9586	41.2620	9.0162	0.9584	40.2207	504.0763

Table 5.11. $p = 50$, *error type* $= 1$

			PLS			PCR		
n	a	psi	coverage	length	penalty	coverage	length	penalty
500	1	0	0.9776	4.9243	44.1168	0.9788	4.9360	0.5632
		0.5	0.9788	4.9304	45.6042	0.9814	4.9969	7.5334
		0.9	0.9804	4.9498	46.9952	0.9882	5.1708	43.8786
	49	0	0.9782	4.9237	41.0860	0.9778	4.9273	0.0012
		0.5	0.9782	4.9296	45.5902	0.9786	4.9979	7.5416
		0.9	0.9800	4.9493	46.9958	0.9880	5.1702	43.8168
	50	0	0.9778	4.9237	41.1072	0.9776	4.9277	0.0010
		0.5	0.9802	4.9471	46.9990	0.9886	5.1583	44.7416
		0.9	0.9798	4.9474	46.9992	0.9880	5.1580	44.7980
1000	1	0	0.9738	4.6734	43.9162	0.9748	4.6763	0.1322
		0.5	0.9734	4.6734	44.5844	0.9738	4.6831	1.6540
		0.9	0.9740	4.6787	46.9940	0.9792	4.7906	43.0660
	49	0	0.9736	4.6734	42.2408	0.9738	4.6734	0.0000
		0.5	0.9744	4.6739	44.5664	0.9734	4.6829	1.7140
		0.9	0.9740	4.6785	46.9924	0.9784	4.7923	43.1088
	50	0	0.9736	4.6734	42.2468	0.9738	4.6734	0.0000
		0.5	0.9732	4.6780	46.9994	0.9790	4.7790	45.0346
		0.9	0.9740	4.6780	46.9994	0.9782	4.7787	45.0822
5000	1	0	0.9498	4.0386	44.2560	0.9498	4.0387	0.0052
		0.5	0.9498	4.0386	43.7142	0.9488	4.0391	0.0892
		0.9	0.9506	4.0388	46.3834	0.9482	4.0561	26.7282
	49	0	0.9498	4.0386	43.5068	0.9498	4.0386	0.0000
		0.5	0.9498	4.0386	43.6980	0.9496	4.0389	0.0818
		0.9	0.9494	4.0387	46.4070	0.9490	4.0562	27.1914
	50	0	0.9498	4.0386	43.5122	0.9498	4.0386	0.0000
		0.5	0.9502	4.0386	47.0000	0.9522	4.0565	45.4298
		0.9	0.9500	4.0387	47.0000	0.9522	4.0563	45.4428

Table 5.12. $p = 50$, *error type* $= 1$

			Ii			I-Min		
n	a	psi	coverage	length	penalty	coverage	length	penalty
500	1	0	0.9850	5.0625	6.3984	0.9856	5.0360	8.5492
		0.5	0.9842	5.0604	6.5596	0.9842	5.0368	8.6302
		0.9	0.9848	5.0617	6.3518	0.9848	5.0378	8.4302
	49	0	0.9778	4.9277	0.0742	0.9778	4.9265	0.1498
		0.5	0.9780	4.9274	0.0752	0.9782	4.9264	0.1522
		0.9	0.9742	4.9935	-10.7068	0.9762	4.9705	-8.8512
	50	0	0.9778	4.9238	0.0000	0.9778	4.9238	0.0000
		0.5	0.9778	4.9238	0.0000	0.9778	4.9238	0.0000
		0.9	0.9756	4.9942	-11.0666	0.9762	4.9695	-9.2146
1000	1	0	0.9758	4.7353	6.3868	0.9756	4.7215	8.6396
		0.5	0.9772	4.7335	6.5390	0.9764	4.7219	8.6216
		0.9	0.9776	4.7337	6.5002	0.9766	4.7219	8.5936
	49	0	0.9740	4.6747	0.0836	0.9742	4.6743	0.1532
		0.5	0.9736	4.6746	0.0844	0.9738	4.6743	0.1580
		0.9	0.9728	4.6870	-2.9844	0.9734	4.6795	-1.8396
	50	0	0.9738	4.6734	0.0000	0.9738	4.6734	0.0000
		0.5	0.9738	4.6734	0.0000	0.9738	4.6734	0.0000
		0.9	0.9718	4.6855	-3.1798	0.9728	4.6788	-2.0432
5000	1	0	0.9502	4.0491	6.3052	0.9504	4.0471	8.5714
		0.5	0.9508	4.0490	6.4562	0.9500	4.0472	8.5294
		0.9	0.9512	4.0490	6.4586	0.9494	4.0472	8.5278
	49	0	0.9502	4.0387	0.0828	0.9500	4.0386	0.1592
		0.5	0.9504	4.0388	0.0848	0.9502	4.0387	0.1586
		0.9	0.9504	4.0388	0.0852	0.9502	4.0387	0.1584
	50	0	0.9498	4.0386	0.0000	0.9498	4.0386	0.0000
		0.5	0.9498	4.0386	0.0000	0.9498	4.0386	0.0000
		0.9	0.9498	4.0386	0.0000	0.9498	4.0386	0.0000

5.1.4 Error type 2

Table 5.13. $p = 5$, *error type* $= 2$

			LASSO			RIDGE		
n	a	psi	coverage	length	penalty	coverage	length	penalty
50	1	0	0.9772	9.9328	0.1824	0.9736	9.8355	8.3426
		0.5	0.9746	9.8959	0.0921	0.9740	9.9275	1.6133
		0.9	0.9758	9.9943	0.0294	0.9772	10.1353	0.6892
	4	0	0.9742	9.7695	0.0568	0.9744	9.7885	1.4834
		0.5	0.9730	9.7707	0.0527	0.9758	9.9376	0.5609
		0.9	0.9756	9.9452	0.0458	0.9776	10.1609	0.6115
	5	0	0.9734	9.7372	0.0219	0.9746	9.7845	1.4030
		0.5	0.9734	9.7361	0.0451	0.9758	9.9101	0.6962
		0.9	0.9760	9.9013	0.0566	0.9784	10.1766	0.8057
100	1	0	0.9714	9.1887	0.1283	0.9702	9.1209	1.2608
		0.5	0.9718	9.1752	0.0623	0.9710	9.1811	0.3677
		0.9	0.9728	9.2326	0.0198	0.9726	9.2914	0.2566
	4	0	0.9704	9.1076	0.0363	0.9704	9.1178	0.1793
		0.5	0.9700	9.1127	0.0359	0.9714	9.2040	0.4420
		0.9	0.9712	9.1821	0.0407	0.9726	9.3169	0.6064
	5	0	0.9700	9.0958	0.0110	0.9702	9.1195	0.1703
		0.5	0.9702	9.0957	0.0358	0.9710	9.1814	0.5732
		0.9	0.9714	9.1522	0.0533	0.9732	9.3268	0.8065
500	1	0	0.9564	6.6879	0.0583	0.9566	6.6803	0.1150
		0.5	0.9554	6.6851	0.0281	0.9556	6.7018	0.1482
		0.9	0.9554	6.6912	0.0136	0.9544	6.7046	0.2058
	4	0	0.9554	6.6784	0.0166	0.9560	6.6837	0.1190
		0.5	0.9566	6.6805	0.0266	0.9556	6.7236	0.3965
		0.9	0.9556	6.6825	0.0400	0.9554	6.7227	0.6081
	5	0	0.9564	6.6768	0.0074	0.9550	6.6837	0.1218
		0.5	0.9554	6.6768	0.0343	0.9538	6.6995	0.5219
		0.9	0.9544	6.6803	0.0533	0.9536	6.7347	0.8105

Table 5.14. $p = 5$, *error type* $= 2$

			PLS			PCR		
n	a	psi	coverage	length	penalty	coverage	length	penalty
50	1	0	0.9734	9.7343	1.2448	0.9748	9.9860	0.6706
		0.5	0.9726	9.7428	1.3232	0.9752	9.9234	1.0894
		0.9	0.9742	9.7454	1.7674	0.9758	9.9200	1.5528
	4	0	0.9732	9.7337	0.8578	0.9754	10.1383	0.3900
		0.5	0.9722	9.7444	1.3014	0.9746	9.9137	1.0718
		0.9	0.9738	9.7491	1.7742	0.9752	9.9247	1.5602
	5	0	0.9728	9.7335	0.8100	0.9736	10.2180	0.3730
		0.5	0.9738	9.7473	1.8096	0.9754	9.9202	1.5706
		0.9	0.9736	9.7485	1.8006	0.9750	9.9231	1.5876
100	1	0	0.9704	9.0976	0.9366	0.9704	9.2133	0.3752
		0.5	0.9696	9.0949	1.0148	0.9704	9.1838	0.8324
		0.9	0.9696	9.0997	1.7724	0.9712	9.1874	1.5566
	4	0	0.9700	9.0968	0.7708	0.9710	9.3033	0.2260
		0.5	0.9698	9.0993	0.9948	0.9698	9.1934	0.8400
		0.9	0.9696	9.0992	1.7594	0.9708	9.1909	1.5576
	5	0	0.9698	9.0966	0.7370	0.9702	9.3822	0.2244
		0.5	0.9696	9.0988	1.8188	0.9710	9.1862	1.6026
		0.9	0.9696	9.0992	1.8058	0.9712	9.1877	1.6066
500	1	0	0.9558	6.6770	0.6646	0.9560	6.7100	0.0962
		0.5	0.9558	6.6770	0.4510	0.9560	6.6979	0.2624
		0.9	0.9558	6.6770	1.6196	0.9556	6.6883	1.4342
	4	0	0.9558	6.6770	0.6704	0.9560	6.7325	0.0490
		0.5	0.9558	6.6770	0.4456	0.9556	6.6967	0.2498
		0.9	0.9556	6.6771	1.6180	0.9554	6.6891	1.4276
	5	0	0.9560	6.6770	0.6410	0.9554	6.7353	0.0454
		0.5	0.9556	6.6770	1.8196	0.9554	6.6879	1.6340
		0.9	0.9556	6.6770	1.8100	0.9552	6.6873	1.6378

Table 5.15. $p = 5$, $error\ type = 2$

			Ii			I-Min		
n	a	psi	coverage	length	penalty	coverage	length	penalty
50	1	0	0.9762	9.9737	1.2850	0.9756	9.9096	1.4938
		0.5	0.9754	9.9523	1.2292	0.9750	9.8985	1.4116
		0.9	0.9740	9.9293	1.2100	0.9742	9.8714	1.3724
	4	0	0.9732	9.8293	0.0044	0.9740	9.7976	0.1108
		0.5	0.9732	9.8391	-0.4678	0.9728	9.7962	-0.2490
		0.9	0.9750	9.9112	-1.9072	0.9746	9.8848	-1.8164
	5	0	0.9730	9.7616	-0.1250	0.9732	9.7456	-0.0772
		0.5	0.9728	9.7794	-0.8186	0.9724	9.7506	-0.6098
		0.9	0.9748	9.9013	-2.9142	0.9740	9.8778	-2.7928
100	1	0	0.9722	9.2154	1.2606	0.9716	9.1810	1.4812
		0.5	0.9708	9.2085	1.2518	0.9704	9.1769	1.4584
		0.9	0.9714	9.1908	1.1746	0.9710	9.1664	1.3160
	4	0	0.9708	9.1401	0.0742	0.9706	9.1261	0.1482
		0.5	0.9706	9.1371	-0.0608	0.9708	9.1237	0.0614
		0.9	0.9722	9.1798	-1.9200	0.9716	9.1681	-1.7926
	5	0	0.9698	9.1007	-0.0144	0.9698	9.0984	-0.0088
		0.5	0.9696	9.1017	-0.2460	0.9698	9.0989	-0.1474
		0.9	0.9710	9.1626	-2.7926	0.9712	9.1454	-2.5192
500	1	0	0.9564	6.6901	1.2574	0.9566	6.6863	1.4778
		0.5	0.9564	6.6885	1.2706	0.9560	6.6848	1.4766
		0.9	0.9560	6.6876	1.1408	0.9558	6.6849	1.2690
	4	0	0.9554	6.6815	0.0782	0.9554	6.6800	0.1592
		0.5	0.9558	6.6813	0.0780	0.9558	6.6797	0.1518
		0.9	0.9570	6.6866	-1.1268	0.9564	6.6848	-0.9246
	5	0	0.9558	6.6770	0.0000	0.9558	6.6770	0.0000
		0.5	0.9558	6.6771	-0.0010	0.9558	6.6771	-0.0004
		0.9	0.9566	6.6858	-1.7416	0.9558	6.6826	-1.4552

Table 5.16. $p = 10$, *error type* $= 2$

			LASSO			RIDGE		
n	a	psi	coverage	length	penalty	coverage	length	penalty
100	1	0	0.9732	9.8031	0.1885	0.9712	9.5736	2.4373
		0.5	0.9738	9.7603	0.0678	0.9728	9.7888	0.6444
		0.9	0.9742	9.9237	0.0239	0.9758	9.9960	0.3979
	9	0	0.9704	9.4358	0.0202	0.9712	9.4726	0.1962
		0.5	0.9698	9.4715	0.0933	0.9718	9.8063	1.4780
		0.9	0.9724	9.6836	0.1567	0.9754	10.0675	2.3817
	10	0	0.9708	9.4322	0.0107	0.9712	9.4726	0.1953
		0.5	0.9706	9.4374	0.1046	0.9726	9.7356	1.6951
		0.9	0.9724	9.6742	0.1763	0.9760	10.0780	2.6794
200	1	0	0.9726	8.6020	0.1343	0.9712	8.4802	0.5794
		0.5	0.9724	8.5839	0.0474	0.9716	8.5922	0.2878
		0.9	0.9736	8.6439	0.0205	0.9738	8.6873	0.3223
	9	0	0.9712	8.4562	0.0146	0.9702	8.4743	0.1531
		0.5	0.9704	8.4726	0.0931	0.9706	8.6535	1.4221
		0.9	0.9710	8.5629	0.1574	0.9734	8.7538	2.3925
	10	0	0.9702	8.4521	0.0079	0.9716	8.4749	0.1557
		0.5	0.9702	8.4609	0.1046	0.9720	8.5921	1.6020
		0.9	0.9718	8.5692	0.1771	0.9728	8.7664	2.6915
1000	1	0	0.9544	6.6473	0.0615	0.9550	6.6317	0.1243
		0.5	0.9542	6.6435	0.0218	0.9540	6.6877	0.1929
		0.9	0.9540	6.6482	0.0197	0.9546	6.6623	0.3021
	9	0	0.9542	6.6291	0.0088	0.9560	6.6390	0.1262
		0.5	0.9560	6.6387	0.0930	0.9540	6.7324	1.4139
		0.9	0.9532	6.6868	0.1577	0.9542	6.7320	2.3974
	10	0	0.9540	6.6287	0.0074	0.9556	6.6397	0.1276
		0.5	0.9556	6.6399	0.1045	0.9548	6.6726	1.5888
		0.9	0.9538	6.7075	0.1774	0.9538	6.7404	2.6970

Table 5.17. $p = 10$, *error type* $= 2$

			PLS			PCR		
n	a	psi	coverage	length	penalty	coverage	length	penalty
100	1	0	0.9704	9.4339	5.8158	0.9702	9.6013	1.4924
		0.5	0.9702	9.4558	6.1860	0.9738	9.7155	3.8892
		0.9	0.9710	9.4629	6.8616	0.9728	9.7908	5.8826
	9	0	0.9702	9.4309	4.2226	0.9712	9.6089	0.2058
		0.5	0.9700	9.4536	6.1666	0.9698	9.7056	3.8472
		0.9	0.9708	9.4607	6.8572	0.9724	9.7880	5.8728
	10	0	0.9700	9.4307	4.1580	0.9710	9.6262	0.1996
		0.5	0.9710	9.4594	6.8820	0.9730	9.7896	5.9248
		0.9	0.9710	9.4602	6.8824	0.9722	9.7927	5.9738
200	1	0	0.9706	8.4503	5.1664	0.9692	8.5011	0.5794
		0.5	0.9706	8.4517	5.6052	0.9700	8.5243	2.5158
		0.9	0.9706	8.4586	6.8662	0.9720	8.5923	5.8420
	9	0	0.9706	8.4510	4.3542	0.9712	8.5289	0.0832
		0.5	0.9706	8.4511	5.5864	0.9718	8.5308	2.5072
		0.9	0.9700	8.4582	6.8660	0.9732	8.5946	5.8388
	10	0	0.9708	8.4511	4.3026	0.9706	8.5380	0.0792
		0.5	0.9708	8.4580	6.9066	0.9724	8.5976	5.9888
		0.9	0.9698	8.4583	6.9064	0.9726	8.5968	6.0074
1000	1	0	0.9544	6.6284	4.8696	0.9542	6.6372	0.0586
		0.5	0.9546	6.6285	4.6576	0.9544	6.6360	0.4072
		0.9	0.9540	6.6286	6.7114	0.9542	6.6464	5.2610
	9	0	0.9544	6.6284	4.7190	0.9544	6.6365	0.0050
		0.5	0.9542	6.6285	4.6982	0.9548	6.6362	0.4388
		0.9	0.9546	6.6286	6.6986	0.9540	6.6463	5.2606
	10	0	0.9544	6.6284	4.6394	0.9548	6.6380	0.0062
		0.5	0.9544	6.6285	6.9118	0.9532	6.6443	6.0560
		0.9	0.9544	6.6285	6.9136	0.9540	6.6444	6.0688

Table 5.18. $p = 10$, *error type* $= 2$

			Ii			I-Min		
n	a	psi	coverage	length	penalty	coverage	length	penalty
100	1	0	0.9740	9.7555	1.7610	0.9744	9.6646	2.2672
		0.5	0.9722	9.7338	1.7844	0.9728	9.6648	2.2372
		0.9	0.9730	9.7184	1.5574	0.9728	9.6564	1.9366
	9	0	0.9702	9.4832	0.0462	0.9696	9.4645	0.1326
		0.5	0.9694	9.4839	-0.6098	0.9694	9.4628	-0.3146
		0.9	0.9716	9.6326	-5.5992	0.9716	9.5871	-5.1592
	10	0	0.9704	9.4431	-0.0488	0.9704	9.4383	-0.0354
		0.5	0.9694	9.4545	-0.8196	0.9688	9.4381	-0.5542
		0.9	0.9718	9.6207	-6.3884	0.9718	9.5803	-5.9570
200	1	0	0.9716	8.5842	1.7310	0.9726	8.5490	2.2558
		0.5	0.9718	8.5798	1.8276	0.9708	8.5498	2.2810
		0.9	0.9726	8.5704	1.5138	0.9714	8.5467	1.9066
	9	0	0.9706	8.4701	0.0752	0.9706	8.4645	0.1476
		0.5	0.9708	8.4721	-0.0212	0.9708	8.4645	0.0838
		0.9	0.9704	8.5072	-4.9152	0.9712	8.4919	-4.4408
	10	0	0.9708	8.4538	-0.0064	0.9706	8.4530	-0.0042
		0.5	0.9708	8.4577	-0.1224	0.9706	8.4544	-0.0700
		0.9	0.9718	8.4975	-5.6226	0.9704	8.4841	-5.1410
1000	1	0	0.9544	6.6434	1.7086	0.9548	6.6399	2.2424
		0.5	0.9538	6.6426	1.7946	0.9552	6.6393	2.2636
		0.9	0.9540	6.6437	1.5758	0.9544	6.6404	1.9936
	9	0	0.9540	6.6307	0.0778	0.9544	6.6303	0.1500
		0.5	0.9538	6.6303	0.0774	0.9542	6.6298	0.1466
		0.9	0.9530	6.6365	-2.2948	0.9538	6.6329	-1.7454
	10	0	0.9544	6.6287	-0.0006	0.9544	6.6287	-0.0006
		0.5	0.9544	6.6288	-0.0018	0.9544	6.6285	-0.0010
		0.9	0.9546	6.6364	-2.6880	0.9544	6.6327	-2.1304

Table 5.19. $p = 20$, *error type* $= 2$

			LASSO			RIDGE		
n	a	psi	coverage	length	penalty	coverage	length	penalty
200	1	0	0.9774	9.1651	0.1693	0.9740	8.8793	1.0859
		0.5	0.9776	9.1295	0.0435	0.9770	9.1726	0.4242
		0.9	0.9786	9.2281	0.0285	0.9792	9.2857	0.4653
	19	0	0.9720	8.7404	0.0096	0.9740	8.7861	0.1840
		0.5	0.9744	8.9431	0.3434	0.9780	9.3115	4.8382
		0.9	0.9836	12.6456	1.5176	0.9860	12.7337	33.5835
	20	0	0.9720	8.7378	0.0076	0.9742	8.7864	0.1864
		0.5	0.9752	9.0368	0.4167	0.9788	9.3056	6.6668
		0.9	0.9842	13.2791	1.6803	0.9846	13.3655	37.0735
400	1	0	0.9760	8.6580	0.1216	0.9736	8.4833	0.3732
		0.5	0.9760	8.6398	0.0311	0.9756	8.7012	0.2900
		0.9	0.9760	8.6831	0.0284	0.9764	8.7205	0.4662
	19	0	0.9736	8.4476	0.0082	0.9728	8.4718	0.1597
		0.5	0.9736	8.5499	0.2972	0.9748	8.7906	4.5522
		0.9	0.9736	8.4465	0.0073	0.9734	8.4722	0.1617
	20	0	0.9722	8.5738	0.3301	0.9752	8.7286	5.8459
		0.5	0.9722	8.5738	0.3301	0.9752	8.7286	5.8459
		0.9	0.9776	12.1085	1.5951	0.9796	12.1732	36.3487
2000	1	0	0.9518	6.6713	0.0556	0.9502	6.6482	0.1293
		0.5	0.9500	6.6726	0.0182	0.9482	6.7635	0.2675
		0.9	0.9508	6.6758	0.0285	0.9502	6.6882	0.5724
	19	0	0.9490	6.6455	0.0072	0.9498	6.6586	0.1300
		0.5	0.9500	6.7354	0.2919	0.9492	6.8468	4.5562
		0.9	0.9524	9.1544	1.2731	0.9512	9.2063	31.3306
	20	0	0.9500	6.6454	0.0073	0.9496	6.6587	0.1307
		0.5	0.9494	6.7452	0.3081	0.9504	6.7558	5.6440
		0.9	0.9518	9.6919	1.4577	0.9530	9.7518	35.0398

Table 5.20. $p = 20$, *error type* $= 2$

			PLS			PCR		
n	a	psi	coverage	length	penalty	coverage	length	penalty
200	1	0	0.9714	8.7420	15.8412	0.9718	8.8462	2.4950
		0.5	0.9726	8.7632	16.3288	0.9734	9.0415	9.6008
		0.9	0.9730	8.7789	16.9664	0.9766	9.1590	15.1610
	19	0	0.9708	8.7361	13.0184	0.9708	8.7907	0.0614
		0.5	0.9730	8.7659	16.3194	0.9766	9.0447	9.6424
		0.9	0.9736	8.7774	16.9692	0.9768	9.1617	15.1982
	20	0	0.9710	8.7360	12.9582	0.9704	8.7925	0.0590
		0.5	0.9738	8.7767	16.9748	0.9780	9.1623	15.3854
		0.9	0.9732	8.7768	16.9746	0.9774	9.1612	15.3770
400	1	0	0.9732	8.4455	15.0306	0.9712	8.4693	0.7044
		0.5	0.9728	8.4480	15.6188	0.9736	8.5351	5.4056
		0.9	0.9736	8.4591	16.9674	0.9754	8.6583	15.1924
	19	0	0.9732	8.4451	13.4362	0.9732	8.4564	0.0148
		0.5	0.9728	8.4478	15.6112	0.9748	8.5285	5.4374
		0.9	0.9732	8.4452	13.4536	0.9730	8.4583	0.0136
	20	0	0.9740	8.4572	16.9836	0.9756	8.6558	15.5362
		0.5	0.9740	8.4572	16.9836	0.9756	8.6558	15.5362
		0.9	0.9740	8.4576	16.9848	0.9762	8.6553	15.5128
2000	1	0	0.9494	6.6447	14.6820	0.9494	6.6466	0.0566
		0.5	0.9496	6.6447	14.4850	0.9492	6.6476	0.5116
		0.9	0.9496	6.6451	16.8462	0.9510	6.6731	13.9172
	19	0	0.9496	6.6448	14.1506	0.9494	6.6451	0.0004
		0.5	0.9498	6.6447	14.4988	0.9494	6.6481	0.4860
		0.9	0.9494	6.6451	16.8554	0.9508	6.6726	13.9260
	20	0	0.9494	6.6447	14.1484	0.9494	6.6448	0.0000
		0.5	0.9496	6.6451	16.9842	0.9500	6.6715	15.6582
		0.9	0.9494	6.6451	16.9856	0.9512	6.6713	15.6668

Table 5.21. $p = 20$, *error type* $= 2$

			Ii			I-Min		
n	a	psi	coverage	length	penalty	coverage	length	penalty
200	1	0	0.9770	9.0424	2.7820	0.9756	8.9704	3.8412
		0.5	0.9760	9.0295	2.9532	0.9754	8.9704	3.8660
		0.9	0.9750	9.0272	2.4360	0.9760	8.9685	3.3324
	19	0	0.9722	8.7571	0.0754	0.9722	8.7518	0.1482
		0.5	0.9726	8.7656	-0.2044	0.9726	8.7577	-0.0168
		0.9	0.9734	8.8747	-11.3566	0.9728	8.8400	-10.4328
	20	0	0.9708	8.7395	-0.0088	0.9708	8.7385	-0.0056
		0.5	0.9706	8.7518	-0.3198	0.9708	8.7454	-0.1868
		0.9	0.9732	8.8656	-12.0570	0.9732	8.8321	-11.1370
400	1	0	0.9748	8.5994	2.7550	0.9760	8.5623	3.7974
		0.5	0.9760	8.5913	2.9214	0.9750	8.5609	3.8520
		0.9	0.9750	8.5914	2.4534	0.9750	8.5628	3.3772
	19	0	0.9730	8.4561	0.0794	0.9726	8.4524	0.1534
		0.5	0.9736	8.4571	0.0552	0.9736	8.4523	0.1356
		0.9	0.9732	8.4465	-0.0034	0.9732	8.4463	-0.0028
	20	0	0.9732	8.4490	-0.0340	0.9732	8.4463	-0.0230
		0.5	0.9732	8.4490	-0.0340	0.9732	8.4463	-0.0230
		0.9	0.9730	8.4777	-9.7906	0.9734	8.4661	-8.7850
2000	1	0	0.9506	6.6646	2.7472	0.9512	6.6593	3.8168
		0.5	0.9510	6.6633	2.9374	0.9504	6.6594	3.8520
		0.9	0.9506	6.6631	2.8362	0.9500	6.6592	3.7752
	19	0	0.9498	6.6462	0.0812	0.9498	6.6456	0.1586
		0.5	0.9498	6.6464	0.0758	0.9496	6.6461	0.1536
		0.9	0.9486	6.6497	-2.3264	0.9498	6.6478	-1.5346
	20	0	0.9494	6.6448	-0.0002	0.9494	6.6448	0.0000
		0.5	0.9494	6.6455	-0.0044	0.9494	6.6453	-0.0038
		0.9	0.9486	6.6490	-2.5668	0.9498	6.6470	-1.7768

Table 5.22. $p = 50$, *error type* $= 2$

			LASSO			RIDGE		
n	a	psi	coverage	length	penalty	coverage	length	penalty
500	1	0	0.9818	9.4225	0.1347	0.9790	9.0358	0.7386
		0.5	0.9828	9.4364	0.0287	0.9824	9.5243	0.4336
		0.9	0.9814	9.4715	0.0456	0.9822	9.5027	2.3224
	49	0	0.9778	8.8799	0.0070	0.9766	8.9282	0.1972
		0.5	0.9860	30.1081	5.3846	0.9866	30.0153	275.5417
		0.9	0.9866	52.1355	8.8119	0.9874	50.9115	493.0807
	50	0	0.9778	8.8791	0.0070	0.9760	8.9278	0.1981
		0.5	0.9864	30.7435	5.5035	0.9866	30.5126	281.7523
		0.9	0.9864	53.1942	8.9968	0.9878	51.9359	503.3529
1000	1	0	0.9772	8.7520	0.0969	0.9764	8.5333	0.4373
		0.5	0.9776	8.7618	0.0265	0.9772	8.8804	0.4032
		0.9	0.9788	8.7811	0.0456	0.9786	8.7970	2.3223
	49	0	0.9752	8.4963	0.0071	0.9766	8.5251	0.1690
		0.5	0.9806	27.8260	5.4041	0.9812	27.7226	275.7521
		0.9	0.9824	48.1866	8.8213	0.9812	47.0304	493.3596
	50	0	0.9754	8.4962	0.0071	0.9762	8.5253	0.1699
		0.5	0.9788	28.3990	5.5201	0.9822	28.1825	281.8970
		0.9	0.9816	49.1633	9.0053	0.9810	47.9782	503.6379
5000	1	0	0.9502	6.6946	0.0435	0.9512	6.6661	0.1145
		0.5	0.9508	6.6966	0.0260	0.9532	6.8585	0.3961
		0.9	0.9510	6.7011	0.0456	0.9516	6.7109	2.3267
	49	0	0.9508	6.6652	0.0072	0.9500	6.6785	0.1341
		0.5	0.9562	23.5115	5.4222	0.9560	23.4344	276.2702
		0.9	0.9574	40.8167	8.8335	0.9542	39.8174	493.8967
	50	0	0.9506	6.6652	0.0073	0.9504	6.6787	0.1344
		0.5	0.9564	23.9868	5.5373	0.9562	23.8197	282.2842
		0.9	0.9578	41.6460	9.0175	0.9542	40.6225	504.1950

Table 5.23. $p = 50$, *error type* $= 2$

			PLS			PCR		
n	a	psi	coverage	length	penalty	coverage	length	penalty
500	1	0	0.9774	8.8801	46.1228	0.9764	8.9420	4.2508
		0.5	0.9772	8.9121	46.4948	0.9810	9.2933	28.9052
		0.9	0.9774	8.9250	46.9988	0.9818	9.4350	44.5870
	49	0	0.9760	8.8757	41.6654	0.9754	8.8804	0.0066
		0.5	0.9784	8.9189	46.4856	0.9796	9.3059	29.0592
		0.9	0.9778	8.9264	46.9988	0.9812	9.4346	44.6098
	50	0	0.9760	8.8758	41.6040	0.9758	8.8808	0.0064
		0.5	0.9776	8.9238	46.9992	0.9808	9.4307	44.9424
		0.9	0.9776	8.9238	46.9992	0.9814	9.4307	44.9104
1000	1	0	0.9762	8.4919	44.9470	0.9758	8.5020	0.9236
		0.5	0.9762	8.4947	45.8202	0.9766	8.5784	12.7002
		0.9	0.9754	8.5071	46.9982	0.9780	8.7624	44.5290
	49	0	0.9758	8.4921	42.5464	0.9760	8.4921	0.0010
		0.5	0.9760	8.4957	45.7988	0.9760	8.5793	12.7304
		0.9	0.9754	8.5071	46.9974	0.9784	8.7611	44.5094
	50	0	0.9758	8.4921	42.5476	0.9760	8.4921	0.0010
		0.5	0.9750	8.5063	46.9998	0.9778	8.7597	45.0994
		0.9	0.9750	8.5064	46.9998	0.9772	8.7590	45.0922
5000	1	0	0.9516	6.6625	44.5236	0.9518	6.6629	0.0508
		0.5	0.9514	6.6625	44.2860	0.9522	6.6639	0.5356
		0.9	0.9508	6.6630	46.9780	0.9514	6.7008	42.2984
	49	0	0.9516	6.6625	43.6690	0.9518	6.6625	0.0002
		0.5	0.9516	6.6625	44.3504	0.9518	6.6639	0.5338
		0.9	0.9506	6.6630	46.9776	0.9530	6.7003	42.3266
	50	0	0.9516	6.6625	43.6522	0.9518	6.6625	0.0000
		0.5	0.9512	6.6630	47.0000	0.9520	6.6963	45.4536
		0.9	0.9514	6.6630	47.0000	0.9526	6.6960	45.4698

Table 5.24. $p = 50$, *error type* $= 2$

			Ii			I-Min		
n	a	psi	coverage	length	penalty	coverage	length	penalty
500	1	0	0.9808	9.2020	6.3806	0.9796	9.1381	8.5888
		0.5	0.9804	9.1973	6.5332	0.9794	9.1387	8.5762
		0.9	0.9806	9.1981	6.0156	0.9802	9.1392	8.0574
	49	0	0.9772	8.8841	0.0766	0.9766	8.8817	0.1542
		0.5	0.9770	8.8886	0.0386	0.9766	8.8840	0.1232
		0.9	0.9764	8.9375	-22.4510	0.9764	8.9170	-20.4886
	50	0	0.9760	8.8770	-0.0048	0.9760	8.8767	-0.0038
		0.5	0.9760	8.8810	-0.0468	0.9760	8.8792	-0.0344
		0.9	0.9744	8.9390	-23.0094	0.9756	8.9174	-21.0708
1000	1	0	0.9760	8.6466	6.3550	0.9764	8.6159	8.6144
		0.5	0.9764	8.6463	6.5334	0.9766	8.6162	8.6132
		0.9	0.9760	8.6466	6.1966	0.9768	8.6160	8.2950
	49	0	0.9760	8.4981	0.0840	0.9764	8.4966	0.1618
		0.5	0.9756	8.4983	0.0702	0.9760	8.4965	0.1528
		0.9	0.9766	8.4991	-14.5582	0.9766	8.4936	-12.5694
	50	0	0.9760	8.4937	-0.0042	0.9760	8.4934	-0.0038
		0.5	0.9760	8.4943	-0.0166	0.9760	8.4938	-0.0148
		0.9	0.9760	8.4964	-14.9778	0.9768	8.4911	-13.0010
5000	1	0	0.9512	6.6821	6.3234	0.9526	6.6785	8.5896
		0.5	0.9520	6.6815	6.4884	0.9526	6.6785	8.6036
		0.9	0.9522	6.6817	6.4806	0.9528	6.6785	8.5976
	49	0	0.9500	6.6628	0.0914	0.9504	6.6627	0.1722
		0.5	0.9508	6.6632	0.0866	0.9506	6.6629	0.1680
		0.9	0.9506	6.6636	-0.3440	0.9506	6.6630	-0.0446
	50	0	0.9518	6.6625	0.0000	0.9518	6.6625	0.0000
		0.5	0.9518	6.6627	-0.0010	0.9518	6.6626	-0.0008
		0.9	0.9514	6.6630	-0.4526	0.9516	6.6627	-0.2166

5.1.5 Error type 3

Table 5.25. $p = 5$, *error type* $= 3$

			LASSO			RIDGE		
n	a	psi	coverage	length	penalty	coverage	length	penalty
50	1	0	0.9830	5.3971	0.1074	0.9826	5.4047	0.2590
		0.5	0.9840	5.3570	0.0537	0.9836	5.4984	0.2100
		0.9	0.9850	5.3324	0.0201	0.9860	5.4049	0.2122
	4	0	0.9832	5.3884	0.0313	0.9838	5.4169	0.1401
		0.5	0.9832	5.3712	0.0340	0.9852	5.5493	0.4079
		0.9	0.9850	5.3487	0.0408	0.9862	5.5233	0.6000
	5	0	0.9828	5.3722	0.0112	0.9836	5.4330	0.1472
		0.5	0.9832	5.3763	0.0358	0.9854	5.4164	0.5373
		0.9	0.9850	5.3589	0.0532	0.9872	5.5624	0.7997
100	1	0	0.9792	4.6866	0.0764	0.9792	4.7108	0.1163
		0.5	0.9794	4.6585	0.0372	0.9790	4.8174	0.1510
		0.9	0.9804	4.6332	0.0155	0.9796	4.6938	0.2023
	4	0	0.9790	4.7007	0.0216	0.9792	4.7432	0.1255
		0.5	0.9786	4.6896	0.0282	0.9782	4.8906	0.3946
		0.9	0.9794	4.6738	0.0397	0.9794	4.8170	0.6033
	5	0	0.9790	4.6950	0.0084	0.9792	4.7560	0.1333
		0.5	0.9790	4.7007	0.0342	0.9792	4.7483	0.5199
		0.9	0.9788	4.6987	0.0529	0.9808	4.8642	0.8041
500	1	0	0.9534	3.3387	0.0345	0.9536	3.3994	0.1096
		0.5	0.9536	3.3281	0.0167	0.9524	3.5598	0.1450
		0.9	0.9534	3.3110	0.0134	0.9550	3.4118	0.2030
	4	0	0.9538	3.3576	0.0114	0.9536	3.4362	0.1162
		0.5	0.9548	3.3542	0.0260	0.9508	3.6422	0.3953
		0.9	0.9548	3.3682	0.0400	0.9536	3.5558	0.6078
	5	0	0.9544	3.3588	0.0074	0.9536	3.4470	0.1190
		0.5	0.9538	3.3702	0.0342	0.9530	3.4966	0.5203
		0.9	0.9540	3.4032	0.0533	0.9544	3.6134	0.8101

Table 5.26. $p = 5$, *error type* $= 3$

			PLS			PCR		
n	a	psi	coverage	length	penalty	coverage	length	penalty
50	1	0	0.9824	5.3711	0.7084	0.9824	5.6776	0.3608
		0.5	0.9828	5.3725	0.8734	0.9838	5.5524	0.7206
		0.9	0.9832	5.3700	1.7394	0.9842	5.3832	1.5168
	4	0	0.9826	5.3697	0.6206	0.9826	5.8634	0.2440
		0.5	0.9828	5.3714	0.8476	0.9826	5.5521	0.7104
		0.9	0.9830	5.3688	1.7350	0.9842	5.3866	1.5264
	5	0	0.9826	5.3695	0.5564	0.9822	5.9911	0.2706
		0.5	0.9830	5.3691	1.8016	0.9848	5.3706	1.5692
		0.9	0.9834	5.3694	1.8066	0.9854	5.3603	1.5962
100	1	0	0.9794	4.6938	0.5902	0.9784	4.8992	0.2132
		0.5	0.9792	4.6941	0.5570	0.9790	4.8307	0.4576
		0.9	0.9794	4.6928	1.6934	0.9796	4.6902	1.4826
	4	0	0.9792	4.6936	0.5748	0.9782	5.0291	0.1586
		0.5	0.9790	4.6940	0.5618	0.9778	4.8233	0.4476
		0.9	0.9792	4.6928	1.7156	0.9796	4.6896	1.4842
	5	0	0.9794	4.6937	0.5370	0.9782	5.0842	0.1586
		0.5	0.9792	4.6929	1.8034	0.9804	4.6621	1.5820
		0.9	0.9792	4.6926	1.8004	0.9802	4.6584	1.5930
500	1	0	0.9538	3.3569	0.5450	0.9528	3.4145	0.0490
		0.5	0.9540	3.3568	0.3200	0.9536	3.4055	0.1146
		0.9	0.9538	3.3568	1.2922	0.9538	3.3729	1.1474
	4	0	0.9538	3.3569	0.5558	0.9538	3.4135	0.0250
		0.5	0.9536	3.3569	0.3320	0.9536	3.4030	0.1098
		0.9	0.9538	3.3568	1.3070	0.9538	3.3725	1.1226
	5	0	0.9538	3.3569	0.5330	0.9528	3.4414	0.0320
		0.5	0.9540	3.3567	1.8106	0.9546	3.3274	1.6084
		0.9	0.9540	3.3567	1.8144	0.9554	3.3254	1.6332

Table 5.27. $p = 5$, *error type* $= 3$

			Ii			I-min		
n	a	psi	coverage	length	penalty	coverage	length	penalty
50	1	0	0.9850	5.3322	1.2696	0.9842	5.3407	1.4802
		0.5	0.9844	5.3367	1.2660	0.9840	5.3435	1.4808
		0.9	0.9842	5.3473	1.1708	0.9840	5.3534	1.3122
	4	0	0.9836	5.3703	0.0922	0.9832	5.3668	0.1658
		0.5	0.9824	5.3935	0.0202	0.9820	5.3782	0.1272
		0.9	0.9834	5.5029	-1.8616	0.9834	5.4701	-1.6752
	5	0	0.9826	5.3703	-0.0014	0.9826	5.3694	-0.0002
		0.5	0.9820	5.4099	-0.1250	0.9826	5.3855	-0.0652
		0.9	0.9832	5.5483	-2.6116	0.9838	5.4813	-2.3550
100	1	0	0.9794	4.6305	1.2684	0.9798	4.6495	1.4934
		0.5	0.9794	4.6325	1.2792	0.9784	4.6481	1.4922
		0.9	0.9790	4.6588	1.1566	0.9786	4.6676	1.2888
	4	0	0.9798	4.6810	0.0918	0.9798	4.6839	0.1672
		0.5	0.9796	4.6789	0.0900	0.9800	4.6822	0.1660
		0.9	0.9778	4.7955	-1.5076	0.9782	4.7520	-1.2298
	5	0	0.9794	4.6935	0.0000	0.9794	4.6935	0.0000
		0.5	0.9794	4.6939	-0.0012	0.9794	4.6937	-0.0008
		0.9	0.9776	4.8079	-2.1136	0.9774	4.7774	-1.9196
500	1	0	0.9562	3.3125	1.2588	0.9558	3.3246	1.4698
		0.5	0.9546	3.3131	1.2860	0.9544	3.3245	1.4844
		0.9	0.9534	3.3243	1.1884	0.9536	3.3307	1.4024
	4	0	0.9548	3.3449	0.0854	0.9546	3.3482	0.1610
		0.5	0.9540	3.3447	0.0880	0.9544	3.3483	0.1636
		0.9	0.9538	3.3844	-0.3814	0.9542	3.3681	-0.1452
	5	0	0.9538	3.3569	0.0000	0.9538	3.3569	0.0000
		0.5	0.9538	3.3569	0.0000	0.9538	3.3569	0.0000
		0.9	0.9538	3.4090	-0.7266	0.9546	3.3848	-0.4884

Table 5.28. $p = 10$, *error type* $= 3$

			LASSO			RIDGE		
n	a	psi	coverage	length	penalty	coverage	length	penalty
100	1	0	0.9826	5.0712	0.1104	0.9824	5.1036	0.1668
		0.5	0.9836	5.0281	0.0397	0.9830	5.3268	0.2090
		0.9	0.9852	5.0034	0.0205	0.9862	5.0745	0.3013
	9	0	0.9804	5.0877	0.0130	0.9814	5.1694	0.1590
		0.5	0.9814	5.1293	0.0929	0.9838	5.4815	1.4125
		0.9	0.9832	5.3474	0.1613	0.9864	5.4732	2.3956
	10	0	0.9798	5.0819	0.0081	0.9816	5.1779	0.1644
		0.5	0.9808	5.1406	0.1044	0.9842	5.1754	1.5884
		0.9	0.9826	5.4734	0.2028	0.9870	5.5471	2.7749
200	1	0	0.9762	4.2971	0.0798	0.9748	4.3708	0.1128
		0.5	0.9764	4.2725	0.0282	0.9756	4.6320	0.1899
		0.9	0.9766	4.2469	0.0197	0.9780	4.3240	0.2992
	9	0	0.9734	4.3620	0.0099	0.9718	4.4411	0.1429
		0.5	0.9732	4.4064	0.0929	0.9760	4.7785	1.4123
		0.9	0.9754	4.6542	0.1573	0.9774	4.7147	2.3893
	10	0	0.9732	4.3619	0.0074	0.9734	4.4484	0.1467
		0.5	0.9738	4.4271	0.1044	0.9760	4.4684	1.5872
		0.9	0.9738	4.7459	0.1794	0.9774	4.7585	2.6975
1000	1	0	0.9548	3.2772	0.0357	0.9562	3.3704	0.1097
		0.5	0.9550	3.2658	0.0140	0.9548	3.7015	0.1900
		0.9	0.9552	3.2490	0.0197	0.9546	3.3741	0.3001
	9	0	0.9544	3.3299	0.0073	0.9550	3.4351	0.1231
		0.5	0.9540	3.4106	0.0930	0.9540	3.8415	1.4131
		0.9	0.9542	3.7372	0.1578	0.9586	3.7640	2.3978
	10	0	0.9552	3.3331	0.0073	0.9548	3.4386	0.1247
		0.5	0.9544	3.4342	0.1045	0.9574	3.5554	1.5880
		0.9	0.9558	3.8301	0.1775	0.9590	3.8024	2.6975

Table 5.29. $p = 10$, *error type* $= 3$

			PLS			PCR		
n	a	psi	coverage	length	penalty	coverage	length	penalty
100	1	0	0.9804	5.0809	4.6928	0.9814	5.2110	0.4524
		0.5	0.9808	5.0840	5.2992	0.9824	5.2301	1.9986
		0.9	0.9816	5.0806	6.8046	0.9862	5.0805	5.7256
	9	0	0.9802	5.0794	3.7304	0.9792	5.2952	0.0992
		0.5	0.9804	5.0842	5.2704	0.9814	5.2292	1.9652
		0.9	0.9814	5.0819	6.8188	0.9846	5.0809	5.7016
	10	0	0.9804	5.0794	3.6872	0.9800	5.2914	0.0894
		0.5	0.9814	5.0804	6.8760	0.9846	5.0418	5.9098
		0.9	0.9818	5.0812	6.8840	0.9858	5.0300	5.9556
200	1	0	0.9742	4.3602	4.5072	0.9740	4.4271	0.1650
		0.5	0.9744	4.3601	4.7540	0.9730	4.4286	0.8790
		0.9	0.9738	4.3581	6.7838	0.9756	4.3359	5.5262
	9	0	0.9738	4.3600	4.0600	0.9738	4.4630	0.0374
		0.5	0.9734	4.3605	4.7258	0.9734	4.4273	0.8574
		0.9	0.9748	4.3582	6.7866	0.9766	4.3355	5.5400
	10	0	0.9738	4.3599	3.9968	0.9738	4.4561	0.0360
		0.5	0.9740	4.3584	6.8838	0.9760	4.2779	6.0038
		0.9	0.9742	4.3584	6.8954	0.9758	4.2720	6.0278
1000	1	0	0.9556	3.3283	4.6964	0.9556	3.3351	0.0088
		0.5	0.9554	3.3283	4.2268	0.9552	3.3425	0.1080
		0.9	0.9556	3.3284	6.1330	0.9546	3.3436	3.8246
	9	0	0.9554	3.3283	4.4694	0.9560	3.3380	0.0030
		0.5	0.9554	3.3283	4.1932	0.9548	3.3453	0.1192
		0.9	0.9554	3.3283	6.1082	0.9546	3.3436	3.8692
	10	0	0.9556	3.3282	4.4778	0.9556	3.3367	0.0022
		0.5	0.9556	3.3278	6.9114	0.9550	3.2683	6.0526
		0.9	0.9558	3.3279	6.9136	0.9548	3.2649	6.0808

Table 5.30. $p = 10$, *error type* $= 3$

			Ii			I-min		
n	a	psi	coverage	length	penalty	coverage	length	penalty
100	1	0	0.9854	5.0381	1.7550	0.9840	5.0599	2.2854
		0.5	0.9842	5.0401	1.8302	0.9840	5.0561	2.3010
		0.9	0.9842	5.0676	1.5234	0.9828	5.0783	1.9142
	9	0	0.9806	5.0846	0.0880	0.9808	5.0831	0.1588
		0.5	0.9808	5.0876	0.0742	0.9812	5.0842	0.1558
		0.9	0.9794	5.2621	-4.4998	0.9790	5.2020	-4.0242
	10	0	0.9804	5.0793	0.0000	0.9804	5.0793	0.0000
		0.5	0.9802	5.0834	-0.0182	0.9804	5.0809	-0.0086
		0.9	0.9792	5.2740	-5.1806	0.9792	5.2123	-4.6892
200	1	0	0.9760	4.2766	1.7322	0.9750	4.3042	2.2608
		0.5	0.9764	4.2799	1.8004	0.9752	4.3031	2.2700
		0.9	0.9758	4.3098	1.5284	0.9752	4.3243	1.9450
	9	0	0.9744	4.3547	0.0868	0.9746	4.3567	0.1616
		0.5	0.9742	4.3545	0.0882	0.9744	4.3558	0.1624
		0.9	0.9724	4.4999	-3.3820	0.9726	4.4541	-2.8298
	10	0	0.9740	4.3598	0.0000	0.9740	4.3598	0.0000
		0.5	0.9740	4.3598	0.0000	0.9740	4.3598	0.0000
		0.9	0.9728	4.5147	-3.9214	0.9730	4.4668	-3.3652
1000	1	0	0.9562	3.2716	1.7262	0.9560	3.2901	2.2778
		0.5	0.9546	3.2739	1.8216	0.9542	3.2901	2.2988
		0.9	0.9550	3.2761	1.8126	0.9540	3.2909	2.2830
	9	0	0.9546	3.3229	0.0816	0.9552	3.3246	0.1616
		0.5	0.9544	3.3229	0.0856	0.9544	3.3244	0.1576
		0.9	0.9534	3.3448	-0.3118	0.9536	3.3338	-0.0584
	10	0	0.9556	3.3283	0.0000	0.9556	3.3283	0.0000
		0.5	0.9556	3.3283	0.0000	0.9556	3.3283	0.0000
		0.9	0.9536	3.3531	-0.4700	0.9550	3.3387	-0.2510

Table 5.31. $p = 20$, *error type* $= 3$

			LASSO			RIDGE		
n	a	psi	coverage	length	penalty	coverage	length	penalty
200	1	0	0.9824	4.6413	0.0999	0.9774	4.7307	0.1594
		0.5	0.9824	4.6062	0.0260	0.9806	5.1541	0.2581
		0.9	0.9832	4.5717	0.0284	0.9836	4.6540	0.4641
	19	0	0.9778	4.7178	0.0076	0.9792	4.8370	0.1767
		0.5	0.9800	7.3327	0.9679	0.9846	7.3026	15.8974
		0.9	0.9840	12.3131	1.9318	0.9870	12.3060	41.5356
	20	0	0.9780	4.7186	0.0071	0.9786	4.8413	0.1794
		0.5	0.9820	7.7210	1.0659	0.9844	7.7211	19.8842
		0.9	0.9836	13.0334	2.0737	0.9868	12.9457	44.2639
400	1	0	0.9828	4.2143	0.0713	0.9788	4.3344	0.1110
		0.5	0.9818	4.1890	0.0197	0.9808	4.7985	0.2567
		0.9	0.9820	4.1562	0.0284	0.9820	4.2628	0.5064
	19	0	0.9778	4.3287	0.0072	0.9788	4.4366	0.1548
		0.5	0.9796	6.6807	0.9281	0.9798	6.6507	15.3194
		0.9	0.9812	11.2254	1.8863	0.9822	11.3035	41.4603
	20	0	0.9774	4.3311	0.0072	0.9780	4.4395	0.1570
		0.5	0.9784	7.0554	1.0317	0.9810	7.0420	19.4679
		0.9	0.9826	11.8164	2.0112	0.9830	11.8246	43.8866
2000	1	0	0.9560	3.2424	0.0323	0.9556	3.3633	0.1097
		0.5	0.9572	3.2297	0.0169	0.9552	3.8902	0.2573
		0.9	0.9572	3.2177	0.0285	0.9544	3.3652	0.5681
	19	0	0.9552	3.3305	0.0072	0.9544	3.4476	0.1283
		0.5	0.9556	5.4232	0.8877	0.9568	5.3949	14.6967
		0.9	0.9526	9.4912	1.8847	0.9530	9.4901	41.5643
	20	0	0.9550	3.3331	0.0073	0.9546	3.4494	0.1290
		0.5	0.9562	5.7651	0.9985	0.9546	5.7452	18.9901
		0.9	0.9512	9.9318	1.9896	0.9522	9.9133	43.8733

Table 5.32. $p = 20$, *error type* $= 3$

			PLS			PCR		
n	a	psi	coverage	length	penalty	coverage	length	penalty
200	1	0	0.9770	4.7157	14.2744	0.9768	4.7673	0.5028
		0.5	0.9780	4.7186	15.2660	0.9780	4.8293	3.8724
		0.9	0.9794	4.7181	16.9438	0.9830	4.6843	14.7874
	19	0	0.9772	4.7148	12.5086	0.9768	4.7696	0.0252
		0.5	0.9776	4.7185	15.2758	0.9788	4.8251	3.7584
		0.9	0.9784	4.7179	16.9406	0.9824	4.6837	14.7720
	20	0	0.9774	4.7148	12.4680	0.9766	4.7686	0.0234
		0.5	0.9784	4.7170	16.9688	0.9828	4.6176	15.2716
		0.9	0.9790	4.7177	16.9690	0.9826	4.6051	15.3358
400	1	0	0.9776	4.3263	14.1218	0.9778	4.3503	0.1480
		0.5	0.9778	4.3267	14.5622	0.9768	4.3626	1.2574
		0.9	0.9770	4.3227	16.9174	0.9804	4.2811	14.4142
	19	0	0.9778	4.3264	13.1406	0.9774	4.3487	0.0066
		0.5	0.9774	4.3264	14.5928	0.9778	4.3649	1.2694
		0.9	0.9774	4.3230	16.9124	0.9806	4.2819	14.3648
	20	0	0.9774	4.3263	13.1106	0.9774	4.3453	0.0058
		0.5	0.9776	4.3232	16.9690	0.9806	4.1915	15.4536
		0.9	0.9774	4.3230	16.9732	0.9802	4.1844	15.4850
2000	1	0	0.9544	3.3221	14.4822	0.9542	3.3237	0.0062
		0.5	0.9542	3.3221	13.9006	0.9544	3.3276	0.0936
		0.9	0.9550	3.3220	16.2294	0.9558	3.3373	9.2508
	19	0	0.9542	3.3221	13.9064	0.9542	3.3221	0.0000
		0.5	0.9540	3.3221	13.8656	0.9542	3.3282	0.0878
		0.9	0.9550	3.3221	16.2146	0.9546	3.3374	9.2892
	20	0	0.9542	3.3221	13.8924	0.9542	3.3221	0.0000
		0.5	0.9550	3.3217	16.9828	0.9560	3.2323	15.5672
		0.9	0.9554	3.3217	16.9848	0.9560	3.2287	15.6332

Table 5.33. $p = 20$, *error type* $= 3$

			Ii			I-min		
n	a	psi	coverage	length	penalty	coverage	length	penalty
200	1	0	0.9802	4.6653	2.7964	0.9794	4.6904	3.8424
		0.5	0.9804	4.6672	2.9548	0.9800	4.6899	3.8700
		0.9	0.9802	4.6928	2.5464	0.9794	4.7055	3.4368
	19	0	0.9770	4.7157	0.0836	0.9768	4.7152	0.1502
		0.5	0.9762	4.7157	0.0804	0.9760	4.7153	0.1516
		0.9	0.9760	4.9224	-7.9698	0.9760	4.8610	-6.9806
	20	0	0.9770	4.7144	0.0000	0.9770	4.7144	0.0000
		0.5	0.9770	4.7144	0.0000	0.9770	4.7144	0.0000
		0.9	0.9752	4.9290	-8.5182	0.9746	4.8658	-7.5174
400	1	0	0.9808	4.2467	2.7842	0.9806	4.2741	3.8372
		0.5	0.9810	4.2505	2.9346	0.9800	4.2743	3.8554
		0.9	0.9812	4.2681	2.6724	0.9802	4.2842	3.6174
	19	0	0.9780	4.3231	0.0928	0.9778	4.3244	0.1696
		0.5	0.9780	4.3237	0.0932	0.9778	4.3247	0.1716
		0.9	0.9762	4.4720	-4.8410	0.9768	4.4248	-3.8356
	20	0	0.9776	4.3262	0.0000	0.9776	4.3262	0.0000
		0.5	0.9776	4.3262	0.0000	0.9776	4.3262	0.0000
		0.9	0.9764	4.4788	-5.2336	0.9766	4.4291	-4.2234
2000	1	0	0.9566	3.2646	2.7564	0.9558	3.2827	3.8554
		0.5	0.9566	3.2676	2.9378	0.9564	3.2831	3.8916
		0.9	0.9560	3.2679	2.9424	0.9558	3.2832	3.8938
	19	0	0.9536	3.3196	0.0808	0.9540	3.3202	0.1516
		0.5	0.9538	3.3195	0.0796	0.9542	3.3203	0.1536
		0.9	0.9540	3.3213	0.0380	0.9544	3.3209	0.1352
	20	0	0.9542	3.3221	0.0000	0.9542	3.3221	0.0000
		0.5	0.9542	3.3221	0.0000	0.9542	3.3221	0.0000
		0.9	0.9542	3.3240	-0.0488	0.9542	3.3227	-0.0190

Table 5.34. $p = 50$, *error type* $= 3$

			LASSO			RIDGE		
n	a	psi	coverage	length	penalty	coverage	length	penalty
500	1	0	0.9844	4.5541	0.0791	0.9770	4.7143	0.1568
		0.5	0.9848	4.5272	0.0261	0.9840	5.4186	0.3949
		0.9	0.9844	4.4756	0.0455	0.9852	4.6259	2.3180
	49	0	0.9768	4.7182	0.0069	0.9768	4.8689	0.1937
		0.5	0.9852	29.5055	5.4280	0.9868	29.1946	276.5110
		0.9	0.9866	51.5629	8.8153	0.9874	50.3339	492.8452
	50	0	0.9766	4.7196	0.0069	0.9764	4.8704	0.1948
		0.5	0.9854	30.1311	5.5411	0.9862	29.6646	282.2699
		0.9	0.9862	52.6287	8.9989	0.9868	51.3668	503.1126
1000	1	0	0.9806	4.1386	0.0564	0.9792	4.3234	0.1098
		0.5	0.9808	4.1208	0.0260	0.9798	5.0363	0.3952
		0.9	0.9812	4.0962	0.0455	0.9808	4.2482	2.3198
	49	0	0.9776	4.3312	0.0071	0.9788	4.4600	0.1668
		0.5	0.9826	27.1555	5.4301	0.9838	26.9770	276.6152
		0.9	0.9826	47.6976	8.8219	0.9854	46.5351	493.2139
	50	0	0.9776	4.3328	0.0071	0.9790	4.4616	0.1677
		0.5	0.9824	27.7298	5.5432	0.9840	27.4175	282.3773
		0.9	0.9826	48.6860	9.0057	0.9850	47.4911	503.4892
5000	1	0	0.9512	3.2152	0.0252	0.9492	3.3660	0.1098
		0.5	0.9510	3.2162	0.0260	0.9496	4.1023	0.3957
		0.9	0.9516	3.2416	0.0456	0.9500	3.3807	2.3230
	49	0	0.9498	3.3499	0.0072	0.9504	3.4663	0.1335
		0.5	0.9574	22.9331	5.4351	0.9572	22.8472	276.8707
		0.9	0.9518	40.4491	8.8344	0.9598	39.4321	493.9118
	50	0	0.9492	3.3516	0.0073	0.9494	3.4671	0.1339
		0.5	0.9590	23.4118	5.5483	0.9602	23.2231	282.6369
		0.9	0.9514	41.2857	9.0184	0.9592	40.2441	504.2016

Table 5.35. $p = 50$, *error type* $= 3$

			PLS			PCR		
n	a	psi	coverage	length	penalty	coverage	length	penalty
500	1	0	0.9768	4.7075	44.1672	0.9774	4.7247	0.5576
		0.5	0.9774	4.7111	45.5572	0.9776	4.7938	7.5190
		0.9	0.9786	4.7083	46.9962	0.9850	4.6355	43.7766
	49	0	0.9762	4.7069	41.0926	0.9760	4.7094	0.0008
		0.5	0.9760	4.7108	45.5942	0.9752	4.7906	7.4866
		0.9	0.9788	4.7080	46.9976	0.9842	4.6369	43.8716
	50	0	0.9762	4.7070	41.1226	0.9762	4.7083	0.0006
		0.5	0.9784	4.7077	46.9996	0.9840	4.5251	44.7806
		0.9	0.9788	4.7078	46.9996	0.9842	4.5172	44.8132
1000	1	0	0.9786	4.3170	43.9064	0.9782	4.3250	0.1548
		0.5	0.9790	4.3174	44.5994	0.9786	4.3336	1.6738
		0.9	0.9790	4.3125	46.9950	0.9806	4.2448	43.2748
	49	0	0.9784	4.3170	42.2222	0.9784	4.3170	0.0000
		0.5	0.9776	4.3178	44.5306	0.9776	4.3346	1.6270
		0.9	0.9782	4.3131	46.9930	0.9806	4.2460	43.2466
	50	0	0.9784	4.3170	42.1958	0.9784	4.3170	0.0000
		0.5	0.9790	4.3131	47.0000	0.9810	4.1135	45.1078
		0.9	0.9790	4.3131	47.0000	0.9810	4.1075	45.1146
5000	1	0	0.9504	3.3242	44.2402	0.9498	3.3246	0.0060
		0.5	0.9502	3.3242	43.6968	0.9500	3.3258	0.0856
		0.9	0.9502	3.3239	46.3626	0.9500	3.3399	26.3572
	49	0	0.9500	3.3242	43.4412	0.9500	3.3242	0.0000
		0.5	0.9502	3.3242	43.6484	0.9500	3.3261	0.0838
		0.9	0.9504	3.3239	46.3680	0.9512	3.3404	26.4844
	50	0	0.9500	3.3242	43.4170	0.9500	3.3242	0.0000
		0.5	0.9508	3.3236	47.0000	0.9514	3.2020	45.3678
		0.9	0.9508	3.3236	47.0000	0.9514	3.1992	45.4166

Table 5.36. $p = 50$, *error type* $= 3$

			Ii			I-min		
n	a	psi	coverage	length	penalty	coverage	length	penalty
500	1	0	0.9818	4.6698	6.39	0.9806	4.6855	8.5948
		0.5	0.9810	4.6695	6.5712	0.9808	4.6859	8.6494
		0.9	0.9806	4.6779	6.3504	0.9804	4.6907	8.4494
	49	0	0.9764	4.7069	0.0822	0.9762	4.7071	0.1616
		0.5	0.9764	4.7067	0.0842	0.9762	4.7070	0.1566
		0.9	0.9754	4.8867	-10.6280	0.9748	4.8364	-8.7944
	50	0	0.9762	4.7067	0.0000	0.9762	4.7067	0.0000
		0.5	0.9762	4.7067	0.0000	0.9762	4.7067	0.0000
		0.9	0.9758	4.8883	-11.0102	0.9752	4.8368	-9.1566
1000	1	0	0.9796	4.2452	6.3632	0.9792	4.2643	8.5738
		0.5	0.9796	4.2468	6.4996	0.9794	4.2639	8.5818
		0.9	0.9800	4.2492	6.4520	0.9794	4.2649	8.5514
	49	0	0.9778	4.3159	0.0822	0.9778	4.3160	0.1578
		0.5	0.9782	4.3161	0.0820	0.9784	4.3162	0.1566
		0.9	0.9772	4.3886	-3.0014	0.9776	4.3553	-1.8548
	50	0	0.9784	4.3170	0.0000	0.9784	4.3170	0.0000
		0.5	0.9784	4.3170	0.0000	0.9784	4.3170	0.0000
		0.9	0.9776	4.3913	-3.1898	0.9780	4.3574	-2.0602
5000	1	0	0.9512	3.2726	6.3130	0.9508	3.2854	8.5656
		0.5	0.9498	3.2736	6.4766	0.9512	3.2854	8.6114
		0.9	0.9500	3.2735	6.4768	0.9512	3.2854	8.6062
	49	0	0.9504	3.3232	0.0808	0.9504	3.3235	0.1552
		0.5	0.9504	3.3232	0.0790	0.9504	3.3235	0.1560
		0.9	0.9504	3.3232	0.0796	0.9504	3.3235	0.1560
	50	0	0.9500	3.3242	0.0000	0.9500	3.3242	0.0000
		0.5	0.9500	3.3242	0.0000	0.9500	3.3242	0.0000
		0.9	0.9500	3.3242	0.0000	0.9500	3.3242	0.0000

5.1.6 Error type 4

Table 5.37. $p = 5$, *error type* $= 4$

			LASSO			RIDGE		
n	a	psi	coverage	length	penalty	coverage	length	penalty
50	1	0	0.9982	2.8619	0.0631	0.9976	2.8912	0.1085
		0.5	0.9978	2.8346	0.0309	0.9964	3.0781	0.1434
		0.9	0.9994	2.8236	0.0155	0.9996	2.9107	0.2007
	4	0	0.9972	2.8558	0.0193	0.9952	2.9491	0.1304
		0.5	0.9976	2.8487	0.0276	0.9968	3.1653	0.3932
		0.9	0.9992	2.8477	0.0396	0.9978	3.0785	0.6010
	5	0	0.9978	2.8461	0.0088	0.9950	2.9759	0.1414
		0.5	0.9972	2.8555	0.0343	0.9976	2.9748	0.5189
		0.9	0.9980	2.8710	0.0528	0.9984	3.1526	0.8011
100	1	0	0.9970	2.4096	0.0450	0.9958	2.4693	0.1090
		0.5	0.9974	2.3956	0.0220	0.9918	2.6638	0.1441
		0.9	0.9992	2.3863	0.0137	0.9976	2.4742	0.2018
	4	0	0.9958	2.4162	0.0140	0.9944	2.5128	0.1226
		0.5	0.9970	2.4119	0.0262	0.9910	2.7427	0.3939
		0.9	0.9974	2.4230	0.0398	0.9960	2.6368	0.6042
	5	0	0.9964	2.4130	0.0076	0.9932	2.5294	0.1302
		0.5	0.9954	2.4229	0.0342	0.9958	2.5569	0.5195
		0.9	0.9956	2.4509	0.0530	0.9940	2.7085	0.8054
500	1	0	0.9738	1.9779	0.0204	0.9666	2.0309	0.1097
		0.5	0.9726	1.9757	0.0110	0.9574	2.1895	0.1451
		0.9	0.9744	1.9753	0.0134	0.9660	2.0425	0.2030
	4	0	0.9702	1.9775	0.0082	0.9648	2.0522	0.1152
		0.5	0.9680	1.9814	0.0260	0.9590	2.2484	0.3949
		0.9	0.9676	1.9909	0.0400	0.9626	2.1663	0.6078
	5	0	0.9686	1.9784	0.0074	0.9656	2.0590	0.1179
		0.5	0.9662	1.9863	0.0342	0.9650	2.1088	0.5199
		0.9	0.9670	2.0073	0.0533	0.9636	2.2205	0.8101

Table 5.38. $p = 5$, *error type* $= 4$

			PLS			PCR		
n	a	psi	coverage	length	penalty	coverage	length	penalty
50	1	0	0.9976	2.8432	0.4028	0.9946	3.1518	0.2378
		0.5	0.9978	2.8436	0.4414	0.9962	3.0032	0.3734
		0.9	0.9974	2.8427	1.6148	0.9984	2.8616	1.3886
	4	0	0.9974	2.8432	0.4030	0.9946	3.4154	0.1970
		0.5	0.9976	2.8435	0.4172	0.9954	3.0152	0.3924
		0.9	0.9974	2.8437	1.6324	0.9988	2.8626	1.4060
	5	0	0.9976	2.8431	0.3638	0.9958	3.5434	0.2222
		0.5	0.9976	2.8431	1.7366	0.9984	2.8429	1.5034
		0.9	0.9976	2.8431	1.7592	0.9990	2.8342	1.5602
100	1	0	0.9942	2.4114	0.4034	0.9928	2.6002	0.1334
		0.5	0.9946	2.4115	0.3036	0.9932	2.5267	0.2374
		0.9	0.9948	2.4115	1.5054	0.9964	2.4276	1.2976
	4	0	0.9944	2.4115	0.4070	0.9930	2.7250	0.1054
		0.5	0.9942	2.4115	0.3102	0.9934	2.5306	0.2434
		0.9	0.9946	2.4113	1.5224	0.9966	2.4287	1.2978
	5	0	0.9942	2.4114	0.3854	0.9930	2.8391	0.1316
		0.5	0.9956	2.4111	1.7676	0.9972	2.4005	1.5488
		0.9	0.9956	2.4110	1.7898	0.9980	2.3940	1.6164
500	1	0	0.9686	1.9769	0.4560	0.9670	2.0133	0.0286
		0.5	0.9688	1.9769	0.1930	0.9680	2.0075	0.0628
		0.9	0.9694	1.9769	0.7244	0.9696	1.9874	0.6100
	4	0	0.9688	1.9769	0.4696	0.9680	2.0390	0.0226
		0.5	0.9682	1.9769	0.1876	0.9658	2.0123	0.0706
		0.9	0.9682	1.9769	0.7024	0.9680	1.9876	0.6042
	5	0	0.9690	1.9769	0.4464	0.9680	2.0512	0.0224
		0.5	0.9696	1.9768	1.7800	0.9738	1.9761	1.5736
		0.9	0.9706	1.9768	1.8022	0.9752	1.9755	1.6320

Table 5.39. $p = 5$, *error type* $= 4$

			Ii			I-Min		
n	a	psi	coverage	length	penalty	coverage	length	penalty
50	1	0	0.9986	2.8262	1.2976	0.9986	2.8315	1.5184
		0.5	0.9984	2.8248	1.3074	0.9980	2.8301	1.5168
		0.9	0.9986	2.8435	1.1774	0.9982	2.8453	1.3100
	4	0	0.9986	2.8412	0.0986	0.9984	2.8407	0.1718
		0.5	0.9980	2.8411	0.0952	0.9978	2.8416	0.1722
		0.9	0.9964	2.9364	-1.2504	0.9970	2.9034	-1.0392
	5	0	0.9976	2.8429	0.0000	0.9976	2.8429	0.0000
		0.5	0.9976	2.8430	-0.0002	0.9976	2.8429	0.0000
		0.9	0.9950	2.9676	-1.9368	0.9962	2.9289	-1.7048
100	1	0	0.9984	2.3876	1.2720	0.9970	2.3943	1.4734
		0.5	0.9984	2.3874	1.2678	0.9978	2.3935	1.4678
		0.9	0.9980	2.4057	1.1486	0.9974	2.4076	1.2824
	4	0	0.9962	2.4037	0.0862	0.9958	2.4056	0.1638
		0.5	0.9968	2.4044	0.0798	0.9966	2.4062	0.1534
		0.9	0.9942	2.4786	-0.8574	0.9944	2.4518	-0.5758
	5	0	0.9944	2.4114	0.0000	0.9944	2.4114	0.0000
		0.5	0.9944	2.4114	0.0000	0.9944	2.4114	0.0000
		0.9	0.9922	2.4960	-1.2584	0.9932	2.4668	-1.0082
500	1	0	0.9734	1.9755	1.2582	0.9716	1.9761	1.4788
		0.5	0.9716	1.9754	1.2778	0.9718	1.9759	1.4820
		0.9	0.9718	1.9753	1.2750	0.9714	1.9759	1.4852
	4	0	0.9696	1.9764	0.0846	0.9702	1.9767	0.1700
		0.5	0.9718	1.9765	0.0900	0.9718	1.9766	0.1674
		0.9	0.9720	1.9768	0.0810	0.9714	1.9768	0.1632
	5	0	0.9684	1.9769	0.0000	0.9684	1.9769	0.0000
		0.5	0.9684	1.9769	0.0000	0.9684	1.9769	0.0000
		0.9	0.9684	1.9773	-0.0150	0.9684	1.9770	-0.0062

Table 5.40. $p = 10$, *error type* $= 4$

			LASSO			RIDGE		
n	a	psi	coverage	length	penalty	coverage	length	penalty
100	1	0	0.9974	2.5935	0.0644	0.9916	2.6598	0.1091
		0.5	0.9962	2.5684	0.0232	0.9946	3.0739	0.1883
		0.9	0.9988	2.5628	0.0196	0.9994	2.6611	0.2974
	9	0	0.9898	2.6156	0.0091	0.9872	2.7876	0.1557
		0.5	0.9890	2.6909	0.0927	0.9914	3.2481	1.4077
		0.9	0.9878	3.8462	0.4142	0.9926	3.7711	3.8525
	10	0	0.9892	2.6154	0.0074	0.9860	2.8010	0.1612
		0.5	0.9872	2.7270	0.1095	0.9942	2.8486	1.5857
		0.9	0.9888	4.4054	0.5466	0.9922	4.3505	5.2355
200	1	0	0.9922	2.2522	0.0465	0.9862	2.3284	0.1093
		0.5	0.9944	2.2393	0.0167	0.9846	2.7246	0.1893
		0.9	0.9970	2.2340	0.0197	0.9950	2.3285	0.2989
	9	0	0.9876	2.2758	0.0078	0.9830	2.4137	0.1407
		0.5	0.9870	2.3509	0.0929	0.9874	2.8808	1.4119
		0.9	0.9784	3.3150	0.3867	0.9842	3.2756	3.7813
	10	0	0.9876	2.2778	0.0073	0.9838	2.4233	0.1447
		0.5	0.9842	2.3747	0.1045	0.9870	2.5127	1.5868
		0.9	0.9766	3.8226	0.5248	0.9842	3.7962	5.2063
1000	1	0	0.9662	1.9526	0.0209	0.9634	2.0077	0.1096
		0.5	0.9706	1.9517	0.0125	0.9614	2.3430	0.1899
		0.9	0.9698	1.9525	0.0197	0.9634	2.0211	0.2999
	9	0	0.9628	1.9562	0.0071	0.9610	2.0489	0.1224
		0.5	0.9616	2.0209	0.0929	0.9576	2.4679	1.4123
		0.9	0.9534	2.7378	0.3559	0.9564	2.7396	3.6841
	10	0	0.9620	1.9573	0.0073	0.9616	2.0520	0.1239
		0.5	0.9598	2.0390	0.1044	0.9604	2.1745	1.5871
		0.9	0.9524	3.1606	0.4974	0.9538	3.1680	5.1358

Table 5.41. $p = 10$, *error type* $= 4$

			PLS			PCR		
n	a	psi	coverage	length	penalty	coverage	length	penalty
100	1	0	0.9904	2.6112	4.0032	0.9900	2.6998	0.1590
		0.5	0.9902	2.6123	4.1954	0.9898	2.6873	0.6392
		0.9	0.9934	2.6088	6.6818	0.9958	2.6295	5.2176
	9	0	0.9900	2.6108	3.3494	0.9882	2.8628	0.0802
		0.5	0.9906	2.6113	4.2520	0.9880	2.6852	0.6278
		0.9	0.9914	2.6097	6.6928	0.9948	2.6312	5.2324
	10	0	0.9902	2.6109	3.3176	0.9890	2.8619	0.0670
		0.5	0.9932	2.6094	6.8388	0.9966	2.5863	5.7646
		0.9	0.9932	2.6092	6.8726	0.9976	2.5734	5.9134
200	1	0	0.9880	2.2732	4.2072	0.9874	2.3166	0.0630
		0.5	0.9878	2.2731	3.9422	0.9876	2.3095	0.2678
		0.9	0.9886	2.2731	6.5042	0.9912	2.2939	4.6416
	9	0	0.9878	2.2731	3.7022	0.9876	2.3885	0.0332
		0.5	0.9880	2.2733	3.9470	0.9870	2.3106	0.2466
		0.9	0.9892	2.2732	6.4804	0.9908	2.2945	4.6328
	10	0	0.9882	2.2731	3.7114	0.9874	2.3893	0.0336
		0.5	0.9884	2.2720	6.8520	0.9966	2.2491	5.8868
		0.9	0.9890	2.2720	6.8860	0.9958	2.2427	5.9800
1000	1	0	0.9626	1.9538	4.6058	0.9628	1.9573	0.0040
		0.5	0.9628	1.9538	3.9158	0.9626	1.9587	0.0272
		0.9	0.9636	1.9538	5.1560	0.9652	1.9611	1.4510
	9	0	0.9632	1.9538	4.2232	0.9626	1.9563	0.0004
		0.5	0.9624	1.9538	3.9382	0.9630	1.9572	0.0240
		0.9	0.9618	1.9538	5.1362	0.9636	1.9610	1.4618
	10	0	0.9630	1.9538	4.2444	0.9628	1.9580	0.0008
		0.5	0.9624	1.9538	6.8854	0.9684	1.9524	5.9086
		0.9	0.9622	1.9538	6.8984	0.9670	1.9517	6.0652

Table 5.42. $p = 10$, *error type* $= 4$

			Ii			I-Min		
n	a	psi	coverage	length	penalty	coverage	length	penalty
100	1	0	0.9964	2.5793	1.7746	0.9944	2.5906	2.2930
		0.5	0.9952	2.5784	1.8470	0.9940	2.5884	2.3128
		0.9	0.9956	2.6029	1.5996	0.9940	2.6064	2.0086
	9	0	0.9916	2.6089	0.0880	0.9914	2.6093	0.1604
		0.5	0.9926	2.6091	0.0842	0.9918	2.6098	0.1598
		0.9	0.9864	2.7469	-2.7350	0.9884	2.7012	-2.1928
	10	0	0.9904	2.6106	0.0000	0.9904	2.6106	0.0000
		0.5	0.9904	2.6106	0.0000	0.9904	2.6106	0.0000
		0.9	0.9836	2.7590	-3.1862	0.9878	2.7108	-2.6546
200	1	0	0.9942	2.2467	1.7354	0.9918	2.2547	2.2628
		0.5	0.9952	2.2466	1.8136	0.9936	2.2543	2.2726
		0.9	0.9940	2.2572	1.6878	0.9934	2.2591	2.1886
	9	0	0.9888	2.2701	0.0894	0.9888	2.2712	0.1632
		0.5	0.9882	2.2702	0.0904	0.9882	2.2712	0.1688
		0.9	0.9848	2.3344	-1.2360	0.9864	2.3071	-0.7542
	10	0	0.9882	2.2731	0.0000	0.9882	2.2731	0.0000
		0.5	0.9882	2.2731	0.0000	0.9882	2.2731	0.0000
		0.9	0.9828	2.3433	-1.5260	0.9840	2.3132	-1.0618
1000	1	0	0.9648	1.9518	1.7274	0.9634	1.9524	2.2726
		0.5	0.9666	1.9519	1.8254	0.9642	1.9522	2.2970
		0.9	0.9666	1.9518	1.8290	0.9646	1.9522	2.2966
	9	0	0.9640	1.9536	0.0832	0.9642	1.9536	0.1546
		0.5	0.9636	1.9535	0.0836	0.9634	1.9535	0.1556
		0.9	0.9634	1.9535	0.0824	0.9630	1.9536	0.1560
	10	0	0.9628	1.9538	0.0000	0.9628	1.9538	0.0000
		0.5	0.9628	1.9538	0.0000	0.9628	1.9538	0.0000
		0.9	0.9628	1.9538	0.0000	0.9628	1.9538	0.0000

Table 5.43. $p = 20$, *error type* $= 4$

			LASSO			RIDGE		
n	a	psi	coverage	length	penalty	coverage	length	penalty
200	1	0	0.9982	2.4205	0.0576	0.9866	2.5036	0.1094
		0.5	0.9978	2.4080	0.0183	0.9886	3.1587	0.2565
		0.9	0.9992	2.3978	0.0284	0.9978	2.5048	0.5142
	19	0	0.9856	2.4677	0.0070	0.9834	2.6787	0.1746
		0.5	0.9842	7.0022	1.1892	0.9872	7.0821	21.6156
		0.9	0.9866	12.1538	2.0630	0.9870	12.4390	45.4908
	20	0	0.9856	2.4703	0.0071	0.9834	2.6859	0.1778
		0.5	0.9836	7.4428	1.2763	0.9862	7.5363	24.9747
		0.9	0.9860	12.8003	2.1776	0.9866	13.0792	48.0181
400	1	0	0.9964	2.1784	0.0414	0.9850	2.2766	0.1097
		0.5	0.9976	2.1710	0.0171	0.9822	2.9235	0.2568
		0.9	0.9986	2.1667	0.0284	0.9922	2.2744	0.5332
	19	0	0.9850	2.2293	0.0071	0.9794	2.4025	0.1538
		0.5	0.9782	6.4046	1.1795	0.9816	6.5021	21.5611
		0.9	0.9792	11.2415	2.0654	0.9786	11.4380	45.5442
	20	0	0.9850	2.2314	0.0072	0.9810	2.4071	0.1559
		0.5	0.9776	6.7623	1.2569	0.9796	6.9301	24.9894
		0.9	0.9792	11.8362	2.1801	0.9788	12.0315	48.0743
2000	1	0	0.9686	1.9424	0.0186	0.9596	1.9998	0.1097
		0.5	0.9686	1.9432	0.0169	0.9586	2.5376	0.2571
		0.9	0.9676	1.9465	0.0285	0.9624	2.0167	0.5691
	19	0	0.9630	1.9517	0.0072	0.9584	2.0545	0.1278
		0.5	0.9574	5.4004	1.1782	0.9558	5.4893	21.5697
		0.9	0.9598	9.5338	2.0682	0.9558	9.6498	45.6055
	20	0	0.9638	1.9528	0.0073	0.9598	2.0558	0.1287
		0.5	0.9574	5.6501	1.2436	0.9578	5.8439	24.9855
		0.9	0.9580	10.0399	2.1831	0.9566	10.1477	48.1391

Table 5.44. $p = 20$, *error type* $= 4$

			PLS			PCR		
n	a	psi	coverage	length	penalty	coverage	length	penalty
200	1	0	0.9862	2.4621	13.3200	0.9860	2.4862	0.1076
		0.5	0.9874	2.4630	13.8342	0.9838	2.4944	0.8248
		0.9	0.9890	2.4612	16.8248	0.9960	2.4840	13.5116
	19	0	0.9868	2.4616	11.9970	0.9862	2.5079	0.0128
		0.5	0.9866	2.4624	13.8370	0.9856	2.4954	0.8518
		0.9	0.9888	2.4622	16.8392	0.9950	2.4849	13.5948
	20	0	0.9864	2.4616	11.9792	0.9862	2.5082	0.0138
		0.5	0.9898	2.4606	16.9512	0.9976	2.4205	15.0250
		0.9	0.9896	2.4606	16.9618	0.9986	2.4111	15.2100
400	1	0	0.9864	2.2220	13.6014	0.9864	2.2345	0.0334
		0.5	0.9868	2.2220	13.4870	0.9866	2.2368	0.2674
		0.9	0.9880	2.2208	16.6384	0.9926	2.2440	11.9354
	19	0	0.9868	2.2219	12.7944	0.9864	2.2409	0.0042
		0.5	0.9872	2.2221	13.4604	0.9846	2.2373	0.2860
		0.9	0.9872	2.2209	16.6488	0.9906	2.2440	11.9068
	20	0	0.9864	2.2219	12.7938	0.9864	2.2388	0.0028
		0.5	0.9878	2.2201	16.9692	0.9964	2.1778	15.2684
		0.9	0.9878	2.2199	16.9754	0.9976	2.1725	15.4520
2000	1	0	0.9634	1.9447	14.2694	0.9630	1.9452	0.0008
		0.5	0.9626	1.9447	13.5912	0.9626	1.9461	0.0184
		0.9	0.9634	1.9448	15.1278	0.9634	1.9495	2.3234
	19	0	0.9630	1.9447	13.6926	0.9630	1.9447	0.0000
		0.5	0.9628	1.9447	13.6106	0.9628	1.9460	0.0162
		0.9	0.9620	1.9447	15.1040	0.9626	1.9495	2.2778
	20	0	0.9626	1.9447	13.6742	0.9630	1.9447	0.0000
		0.5	0.9624	1.9447	16.9770	0.9672	1.9427	15.5024
		0.9	0.9626	1.9447	16.9836	0.9664	1.9421	15.7158

Table 5.45. $p = 20$, *error type* $= 4$

			Ii			I-Min		
n	a	psi	coverage	length	penalty	coverage	length	penalty
200	1	0	0.9956	2.4331	2.8434	0.9932	2.4429	3.8994
		0.5	0.9948	2.4346	2.9980	0.9924	2.4434	3.9148
		0.9	0.9930	2.4448	2.8534	0.9910	2.4480	3.8098
	19	0	0.9880	2.4605	0.0832	0.9876	2.4603	0.1640
		0.5	0.9864	2.4603	0.0814	0.9860	2.4602	0.1618
		0.9	0.9830	2.5714	-3.2118	0.9840	2.5302	-2.3506
	20	0	0.9864	2.4616	0.0000	0.9864	2.4616	0.0000
		0.5	0.9864	2.4616	0.0000	0.9864	2.4616	0.0000
		0.9	0.9830	2.5764	-3.5258	0.9832	2.5336	-2.6620
400	1	0	0.9930	2.1908	2.7674	0.9912	2.1998	3.8244
		0.5	0.9934	2.1923	2.9510	0.9918	2.1998	3.8662
		0.9	0.9942	2.1931	2.9484	0.9924	2.2003	3.8608
	19	0	0.9874	2.2204	0.0820	0.9876	2.2207	0.1548
		0.5	0.9866	2.2206	0.0804	0.9868	2.2209	0.1594
		0.9	0.9842	2.2457	-0.5718	0.9858	2.2313	-0.1816
	20	0	0.9864	2.2219	0.0000	0.9864	2.2219	0.0000
		0.5	0.9864	2.2219	0.0000	0.9864	2.2219	0.0000
		0.9	0.9840	2.2486	-0.7088	0.9858	2.2331	-0.3698
2000	1	0	0.9642	1.9426	2.7344	0.9672	1.9430	3.8056
		0.5	0.9660	1.9426	2.9172	0.9660	1.9430	3.8524
		0.9	0.9670	1.9426	2.9142	0.9666	1.9430	3.8568
	19	0	0.9628	1.9446	0.0844	0.9628	1.9446	0.1654
		0.5	0.9634	1.9446	0.0856	0.9632	1.9447	0.1662
		0.9	0.9634	1.9446	0.0862	0.9632	1.9447	0.1656
	20	0	0.9630	1.9447	0.0000	0.9630	1.9447	0.0000
		0.5	0.9630	1.9447	0.0000	0.9630	1.9447	0.0000
		0.9	0.9630	1.9447	0.0000	0.9630	1.9447	0.0000

Table 5.46. $p = 50$, *error type* $= 4$

			LASSO			RIDGE		
n	a	psi	coverage	length	penalty	coverage	length	penalty
500	1	0	0.9996	2.3296	0.0458	0.9882	2.4529	0.1095
		0.5	1.0000	2.3252	0.0260	0.9916	3.4228	0.3951
		0.9	1.0000	2.3312	0.0455	0.9992	2.4534	2.3189
	49	0	0.9870	2.4297	0.0069	0.9840	2.6907	0.1931
		0.5	0.9864	29.2537	5.4303	0.9886	28.9000	276.6280
		0.9	0.9862	51.4575	8.8190	0.9888	50.1937	493.0514
	50	0	0.9868	2.4315	0.0069	0.9850	2.6943	0.1943
		0.5	0.9860	29.8794	5.5434	0.9890	29.3848	282.3888
		0.9	0.9868	52.5310	9.0027	0.9888	51.2332	503.3230
1000	1	0	0.9986	2.1316	0.0328	0.9814	2.2520	0.1096
		0.5	0.9992	2.1318	0.0260	0.9858	3.1824	0.3954
		0.9	0.9988	2.1451	0.0456	0.9948	2.2599	2.3214
	49	0	0.9822	2.2194	0.0071	0.9778	2.4154	0.1664
		0.5	0.9820	26.9042	5.4342	0.9820	26.7112	276.8280
		0.9	0.9824	47.5853	8.8286	0.9834	46.3997	493.5889
	50	0	0.9806	2.2209	0.0071	0.9772	2.4174	0.1672
		0.5	0.9828	27.4816	5.5474	0.9822	27.1549	282.5934
		0.9	0.9828	48.5766	9.0125	0.9832	47.3586	503.8719
5000	1	0	0.9650	1.9374	0.0146	0.9622	1.9962	0.1097
		0.5	0.9692	1.9406	0.0260	0.9604	2.7593	0.3956
		0.9	0.9684	1.9500	0.0456	0.9650	2.0249	2.3225
	49	0	0.9620	1.9600	0.0072	0.9644	2.0639	0.1332
		0.5	0.9566	22.6848	5.4339	0.9596	22.5948	276.8110
		0.9	0.9592	40.3054	8.8325	0.9584	39.2754	493.8069
	50	0	0.9608	1.9607	0.0073	0.9642	2.0645	0.1336
		0.5	0.9576	23.1715	5.5471	0.9596	22.9717	282.5758
		0.9	0.9598	41.1435	9.0165	0.9586	40.0886	504.0944

Table 5.47. $p = 50$, *error type* $= 4$

			PLS			PCR		
n	a	psi	coverage	length	penalty	coverage	length	penalty
500	1	0	0.9878	2.4099	42.8396	0.9864	2.4159	0.0874
		0.5	0.9880	2.4105	43.7510	0.9856	2.4233	1.0630
		0.9	0.9916	2.4082	46.9714	0.9982	2.4248	41.2944
	49	0	0.9876	2.4098	40.6902	0.9878	2.4160	0.0008
		0.5	0.9880	2.4104	43.7492	0.9850	2.4233	1.0614
		0.9	0.9920	2.4083	46.9704	0.9986	2.4250	41.2552
	50	0	0.9876	2.4097	40.6740	0.9878	2.4143	0.0006
		0.5	0.9908	2.4071	46.9982	0.9994	2.3277	44.7296
		0.9	0.9916	2.4071	46.9994	0.9994	2.3219	44.8650
1000	1	0	0.9804	2.1960	43.1884	0.9804	2.1981	0.0212
		0.5	0.9804	2.1960	43.2666	0.9816	2.2005	0.2622
		0.9	0.9820	2.1953	46.8534	0.9892	2.2216	36.2592
	49	0	0.9800	2.1960	41.8898	0.9802	2.1960	0.0000
		0.5	0.9798	2.1961	43.2806	0.9804	2.2004	0.2738
		0.9	0.9794	2.1949	46.8586	0.9876	2.2220	36.2768
	50	0	0.9804	2.1960	41.8580	0.9802	2.1960	0.0000
		0.5	0.9828	2.1940	46.9996	0.9996	2.1296	45.0832
		0.9	0.9822	2.1940	46.9998	0.9990	2.1265	45.2190
5000	1	0	0.9586	1.9402	43.8850	0.9584	1.9402	0.0004
		0.5	0.9586	1.9402	43.3556	0.9586	1.9404	0.0114
		0.9	0.9586	1.9402	45.1974	0.9592	1.9427	3.2642
	49	0	0.9584	1.9402	43.2248	0.9584	1.9402	0.0000
		0.5	0.9584	1.9402	43.3654	0.9580	1.9404	0.0114
		0.9	0.9574	1.9402	45.2090	0.9574	1.9426	3.2202
	50	0	0.9582	1.9402	43.2212	0.9584	1.9402	0.0000
		0.5	0.9578	1.9402	46.9996	0.9680	1.9378	45.3298
		0.9	0.9590	1.9402	46.9998	0.9660	1.9375	45.4490

Table 5.48. $p = 50$, *error type* $= 4$

			Ii			I-Min		
n	a	psi	coverage	length	penalty	coverage	length	penalty
500	1	0	0.9954	2.3762	6.2940	0.9938	2.3864	8.4840
		0.5	0.9960	2.3769	6.4626	0.9934	2.3863	8.5248
		0.9	0.9958	2.3774	6.4550	0.9940	2.3867	8.5156
	49	0	0.9880	2.4094	0.0836	0.9880	2.4095	0.1596
		0.5	0.9874	2.4095	0.0842	0.9878	2.4094	0.1576
		0.9	0.9876	2.4359	-0.8516	0.9868	2.4204	-0.3274
	50	0	0.9878	2.4097	0.0000	0.9878	2.4097	0.0000
		0.5	0.9878	2.4097	0.0000	0.9878	2.4097	0.0000
		0.9	0.9868	2.4374	-0.9982	0.9862	2.4209	-0.5070
1000	1	0	0.9904	2.1635	6.3182	0.9870	2.1714	8.5726
		0.5	0.9884	2.1640	6.4940	0.9872	2.1715	8.5782
		0.9	0.9886	2.1641	6.4928	0.9870	2.1716	8.5754
	49	0	0.9794	2.1954	0.0864	0.9796	2.1955	0.1598
		0.5	0.9788	2.1954	0.0884	0.9796	2.1956	0.1584
		0.9	0.9788	2.1955	0.0834	0.9794	2.1956	0.1570
	50	0	0.9802	2.1960	0.0000	0.9802	2.1960	0.0000
		0.5	0.9802	2.1960	0.0000	0.9802	2.1960	0.0000
		0.9	0.9802	2.1962	-0.0054	0.9802	2.1960	-0.0016
5000	1	0	0.9624	1.9375	6.3512	0.9610	1.9379	8.6178
		0.5	0.9632	1.9376	6.5162	0.9600	1.9379	8.6114
		0.9	0.9636	1.9376	6.5148	0.9598	1.9379	8.6112
	49	0	0.9588	1.9401	0.0838	0.9588	1.9402	0.1594
		0.5	0.9606	1.9401	0.0840	0.9604	1.9402	0.1582
		0.9	0.9608	1.9401	0.0840	0.9606	1.9402	0.1588
	50	0	0.9584	1.9402	0.0000	0.9584	1.9402	0.0000
		0.5	0.9584	1.9402	0.0000	0.9584	1.9402	0.0000
		0.9	0.9584	1.9402	0.0000	0.9584	1.9402	0.0000

5.1.7 Error type 5

Table 5.49. $p = 5$, *error type* $= 5$

			LASSO			RIDGE		
n	a	psi	coverage	length	penalty	coverage	length	penalty
50	1	0	0.9616	21.1852	0.4107	0.9616	21.1415	94.5727
		0.5	0.9628	21.1068	0.2307	0.9632	21.1888	32.1884
		0.9	0.9640	21.2154	0.0650	0.9648	21.4821	9.2305
	4	0	0.9638	20.8359	0.2330	0.9626	20.9342	25.8287
		0.5	0.9622	20.7961	0.1294	0.9626	21.0793	1.4247
		0.9	0.9630	21.2134	0.0638	0.9640	21.4777	0.6886
	5	0	0.9632	20.7620	0.1540	0.9618	20.9019	16.8077
		0.5	0.9630	20.7220	0.1036	0.9626	21.0683	1.2830
		0.9	0.9636	21.1677	0.0716	0.9646	21.4902	0.8334
100	1	0	0.9650	21.4990	0.2657	0.9658	21.4402	29.0310
		0.5	0.9644	21.4650	0.1358	0.9654	21.5059	7.0181
		0.9	0.9648	21.5914	0.0339	0.9646	21.7482	1.2401
	4	0	0.9648	21.2468	0.0924	0.9646	21.3013	3.2694
		0.5	0.9644	21.2939	0.0716	0.9644	21.4854	0.8890
		0.9	0.9646	21.5915	0.0476	0.9640	21.7711	0.6182
	5	0	0.9646	21.2121	0.0372	0.9648	21.2779	1.3419
		0.5	0.9642	21.2529	0.0546	0.9646	21.4794	0.9794
		0.9	0.9650	21.5430	0.0576	0.9644	21.7756	0.8080
500	1	0	0.9482	13.8010	0.1131	0.9478	13.7766	0.3864
		0.5	0.9472	13.8006	0.0532	0.9478	13.7919	0.3562
		0.9	0.9480	13.8216	0.0165	0.9486	13.8375	0.2711
	4	0	0.9472	13.7743	0.0294	0.9474	13.7744	0.1510
		0.5	0.9480	13.7777	0.0308	0.9472	13.8039	0.4269
		0.9	0.9474	13.8011	0.0401	0.9476	13.8466	0.6088
	5	0	0.9482	13.7717	0.0078	0.9476	13.7748	0.1395
		0.5	0.9478	13.7716	0.0345	0.9480	13.7992	0.5571
		0.9	0.9470	13.7921	0.0534	0.9476	13.8471	0.8113

Table 5.50. $p = 5$, *error type* $= 5$

			PLS			PCR		
n	a	psi	coverage	length	penalty	coverage	length	penalty
50	1	0	0.9626	20.6040	2.0248	0.9644	21.1752	1.4570
		0.5	0.9624	20.7253	1.7814	0.9630	21.0889	1.5424
		0.9	0.9630	20.6704	1.8904	0.9646	21.0557	1.6786
	4	0	0.9630	20.5924	1.4584	0.9630	21.1641	0.8686
		0.5	0.9630	20.5986	1.6350	0.9636	21.0224	1.3652
		0.9	0.9628	20.6030	1.8334	0.9636	21.0327	1.6280
	5	0	0.9628	20.5899	1.3242	0.9630	21.1984	0.7400
		0.5	0.9626	20.6038	1.8662	0.9640	21.0446	1.6440
		0.9	0.9628	20.6032	1.8492	0.9640	21.0336	1.6346
100	1	0	0.9640	21.2176	1.6702	0.9642	21.4440	1.0586
		0.5	0.9640	21.2380	1.5566	0.9646	21.4646	1.3176
		0.9	0.9640	21.2234	1.8296	0.9648	21.4877	1.6088
	4	0	0.9644	21.2133	1.1508	0.9650	21.4358	0.5352
		0.5	0.9640	21.2200	1.5150	0.9640	21.4530	1.2700
		0.9	0.9642	21.2196	1.8250	0.9646	21.4845	1.6070
	5	0	0.9646	21.2127	1.0744	0.9650	21.4320	0.4628
		0.5	0.9642	21.2188	1.8472	0.9644	21.4893	1.6310
		0.9	0.9642	21.2192	1.8294	0.9646	21.4871	1.6224
500	1	0	0.9484	13.7716	0.9818	0.9484	13.7991	0.2594
		0.5	0.9486	13.7717	0.8778	0.9470	13.7927	0.7214
		0.9	0.9482	13.7719	1.7668	0.9484	13.8022	1.5770
	4	0	0.9484	13.7716	0.9292	0.9486	13.8056	0.1138
		0.5	0.9484	13.7716	0.8598	0.9478	13.7893	0.7270
		0.9	0.9484	13.7718	1.7584	0.9484	13.8029	1.5890
	5	0	0.9484	13.7715	0.8982	0.9490	13.8062	0.1054
		0.5	0.9484	13.7717	1.8330	0.9486	13.8040	1.6486
		0.9	0.9482	13.7717	1.8182	0.9488	13.8034	1.6514

Table 5.51. $p = 5$, *error type* $= 5$

			Ii			I-Min		
n	a	psi	coverage	length	penalty	coverage	length	penalty
50	1	0	0.9628	21.0589	1.2008	0.9618	20.9289	1.4026
		0.5	0.9632	21.0298	1.1654	0.9626	20.9318	1.3078
		0.9	0.9632	21.0426	1.2368	0.9630	20.9125	1.4088
	4	0	0.9640	20.8381	-0.7648	0.9636	20.7258	-0.5028
		0.5	0.9630	20.9102	-1.3090	0.9626	20.8074	-1.0726
		0.9	0.9616	21.0270	-1.8634	0.9614	20.9349	-1.7362
	5	0	0.9644	20.7346	-1.2090	0.9630	20.6329	-0.9272
		0.5	0.9628	20.7937	-1.8984	0.9630	20.7173	-1.6654
		0.9	0.9628	21.0285	-2.8950	0.9622	20.9477	-2.7872
100	1	0	0.9644	21.5258	1.2320	0.9642	21.4415	1.4484
		0.5	0.9650	21.4847	1.1688	0.9652	21.4264	1.3294
		0.9	0.9646	21.4986	1.2218	0.9646	21.4171	1.3872
	4	0	0.9646	21.2671	-0.2582	0.9646	21.2491	-0.0598
		0.5	0.9652	21.2711	-0.9186	0.9646	21.2435	-0.6788
		0.9	0.9640	21.4819	-1.8932	0.9644	21.4263	-1.7830
	5	0	0.9638	21.1280	-0.4822	0.9640	21.1528	-0.3118
		0.5	0.9650	21.1595	-1.4208	0.9648	21.1774	-1.1628
		0.9	0.9634	21.4642	-2.9166	0.9640	21.4192	-2.8222
500	1	0	0.9476	13.8139	1.2686	0.9474	13.8024	1.4698
		0.5	0.9478	13.8135	1.2590	0.9472	13.8046	1.4598
		0.9	0.9486	13.8085	1.1642	0.9488	13.8012	1.2988
	4	0	0.9482	13.7848	0.0878	0.9482	13.7814	0.1550
		0.5	0.9488	13.7841	0.0362	0.9484	13.7805	0.1302
		0.9	0.9472	13.7972	-1.9176	0.9478	13.7918	-1.7438
	5	0	0.9484	13.7716	0.0000	0.9484	13.7716	0.0000
		0.5	0.9486	13.7663	-0.0880	0.9484	13.7707	-0.0450
		0.9	0.9472	13.7909	-2.6966	0.9474	13.7825	-2.3714

Table 5.52. $p = 10$, *error type* $= 5$

			LASSO			RIDGE		
n	a	psi	coverage	length	penalty	coverage	length	penalty
100	1	0	0.9688	23.0022	0.3910	0.9672	22.7614	61.3493
		0.5	0.9682	22.9416	0.1426	0.9670	22.9726	3.4476
		0.9	0.9682	23.2572	0.0344	0.9682	23.4394	0.8377
	9	0	0.9652	21.8971	0.0530	0.9664	22.0767	0.7007
		0.5	0.9654	22.0803	0.0999	0.9672	22.8498	2.0811
		0.9	0.9662	22.8714	0.1569	0.9680	23.4812	2.3839
	10	0	0.9648	21.8723	0.0304	0.9656	22.0559	0.6261
		0.5	0.9648	21.9827	0.1079	0.9674	22.8336	2.3908
		0.9	0.9666	22.8178	0.1765	0.9676	23.4841	2.6816
200	1	0	0.9616	20.6542	0.2600	0.9630	20.4510	11.2444
		0.5	0.9624	20.6325	0.0935	0.9626	20.6288	1.3254
		0.9	0.9632	20.8426	0.0253	0.9632	20.9093	0.5184
	9	0	0.9620	20.1871	0.0256	0.9624	20.2363	0.3207
		0.5	0.9624	20.2409	0.0936	0.9622	20.6187	1.6834
		0.9	0.9624	20.5703	0.1573	0.9634	20.9428	2.3901
	10	0	0.9618	20.1815	0.0103	0.9620	20.2300	0.2949
		0.5	0.9618	20.1980	0.1048	0.9624	20.6116	1.9633
		0.9	0.9630	20.5431	0.1769	0.9636	20.9468	2.6887
1000	1	0	0.9542	14.0529	0.1182	0.9532	14.0004	0.3985
		0.5	0.9538	14.0516	0.0414	0.9540	14.0343	0.2524
		0.9	0.9550	14.0778	0.0198	0.9548	14.0950	0.3223
	9	0	0.9534	13.9912	0.0127	0.9534	13.9963	0.1308
		0.5	0.9542	13.9990	0.0931	0.9542	14.0662	1.4146
		0.9	0.9544	14.0307	0.1577	0.9552	14.1142	2.3973
	10	0	0.9534	13.9913	0.0074	0.9534	13.9961	0.1324
		0.5	0.9538	13.9935	0.1046	0.9554	14.0574	1.5895
		0.9	0.9548	14.0280	0.1774	0.9552	14.1146	2.6968

Table 5.53. $p = 10$, *error type* $= 5$

			PLS			PCR		
n	a	psi	coverage	length	penalty	coverage	length	penalty
100	1	0	0.9652	21.9321	7.0690	0.9672	22.6288	4.1094
		0.5	0.9656	21.9690	6.7280	0.9664	22.8001	5.2690
		0.9	0.9656	21.9532	6.8950	0.9682	22.9066	5.9764
	9	0	0.9656	21.8612	5.1690	0.9650	22.0720	0.6694
		0.5	0.9654	21.9508	6.7256	0.9674	22.8270	5.2474
		0.9	0.9656	21.9493	6.8956	0.9684	22.9111	5.9692
	10	0	0.9650	21.8591	5.0980	0.9652	22.0583	0.6076
		0.5	0.9660	21.9501	6.9110	0.9678	22.9143	5.9986
		0.9	0.9656	21.9506	6.9016	0.9684	22.9119	6.0130
200	1	0	0.9622	20.1904	6.5072	0.9620	20.3792	2.6322
		0.5	0.9614	20.2010	6.5388	0.9618	20.5360	4.7006
		0.9	0.9616	20.2032	6.8946	0.9620	20.6588	6.0014
	9	0	0.9620	20.1813	4.9562	0.9624	20.2534	0.2872
		0.5	0.9624	20.2053	6.5580	0.9620	20.5609	4.8004
		0.9	0.9620	20.2035	6.8994	0.9620	20.6537	5.9770
	10	0	0.9620	20.1814	4.9038	0.9624	20.2575	0.2632
		0.5	0.9618	20.2033	6.9132	0.9626	20.6570	6.0030
		0.9	0.9618	20.2029	6.9108	0.9626	20.6584	6.0196
1000	1	0	0.9536	13.9910	5.4596	0.9534	13.9986	0.3132
		0.5	0.9536	13.9910	5.3722	0.9526	14.0087	1.9826
		0.9	0.9530	13.9919	6.8546	0.9542	14.0552	5.9000
	9	0	0.9536	13.9911	4.8674	0.9532	13.9967	0.0292
		0.5	0.9534	13.9914	5.3514	0.9538	14.0105	1.9626
		0.9	0.9526	13.9921	6.8584	0.9536	14.0577	5.8950
	10	0	0.9536	13.9910	4.8930	0.9536	14.0003	0.0254
		0.5	0.9530	13.9920	6.9086	0.9542	14.0593	6.1110
		0.9	0.9530	13.9921	6.9054	0.9536	14.0583	6.1140

Table 5.54. $p = 10$, *error type* $= 5$

			Ii			I-Min		
n	a	psi	coverage	length	penalty	coverage	length	penalty
100	1	0	0.9678	22.7774	1.6922	0.9668	22.5406	2.2324
		0.5	0.9668	22.7174	1.6012	0.9668	22.5324	2.0204
		0.9	0.9668	22.6763	1.6590	0.9670	22.4918	2.0252
	9	0	0.9662	21.7953	-0.9800	0.9656	21.8130	-0.5560
		0.5	0.9654	21.8909	-2.9946	0.9650	21.8722	-2.4834
		0.9	0.9662	22.6257	-6.4296	0.9664	22.4837	-5.9826
	10	0	0.9662	21.6594	-1.2246	0.9650	21.7153	-0.8224
		0.5	0.9636	21.7640	-3.4942	0.9642	21.7783	-2.9766
		0.9	0.9660	22.5859	-7.3136	0.9666	22.4553	-6.8800
200	1	0	0.9624	20.5941	1.7412	0.9624	20.4819	2.2662
		0.5	0.9622	20.5524	1.6896	0.9614	20.4705	2.1600
		0.9	0.9622	20.5496	1.6246	0.9620	20.4677	1.9946
	9	0	0.9620	20.2052	-0.0402	0.9622	20.2081	0.0948
		0.5	0.9620	20.1091	-1.7028	0.9618	20.1363	-1.2178
		0.9	0.9614	20.4462	-6.0360	0.9612	20.4087	-5.6732
	10	0	0.9614	20.1461	-0.1378	0.9618	20.1647	-0.0716
		0.5	0.9616	20.0419	-2.0414	0.9616	20.0809	-1.5562
		0.9	0.9608	20.4246	-6.9036	0.9614	20.3902	-6.5434
1000	1	0	0.9536	14.0490	1.7164	0.9540	14.0323	2.2568
		0.5	0.9538	14.0469	1.7952	0.9542	14.0350	2.2782
		0.9	0.9548	14.0459	1.4790	0.9546	14.0339	1.9036
	9	0	0.9542	13.9977	0.0880	0.9542	13.9959	0.1612
		0.5	0.9532	13.9982	0.0812	0.9536	13.9958	0.1612
		0.9	0.9526	14.0002	-4.5872	0.9530	14.0021	-4.1018
	10	0	0.9536	13.9910	0.0000	0.9536	13.9910	0.0000
		0.5	0.9534	13.9904	-0.0070	0.9536	13.9909	-0.0026
		0.9	0.9542	13.9953	-5.2558	0.9540	13.9935	-4.7612

Table 5.55. $p = 20$, *error type* $= 5$

			LASSO			RIDGE		
n	a	psi	coverage	length	penalty	coverage	length	penalty
200	1	0	0.9638	22.0391	0.3307	0.9616	21.6416	26.0212
		0.5	0.9634	22.0000	0.0871	0.9628	22.0063	1.7339
		0.9	0.9656	22.3324	0.0307	0.9664	22.4041	0.6712
	19	0	0.9618	20.6565	0.0155	0.9612	20.7638	0.3602
		0.5	0.9602	20.7313	0.2929	0.9638	21.9347	4.7459
		0.9	0.9640	22.1453	0.5604	0.9664	22.6021	11.8142
	20	0	0.9620	20.6513	20.0098	0.9610	20.7601	0.3487
		0.5	0.9608	20.6857	0.3096	0.9646	21.9098	5.1415
		0.9	0.9642	22.2160	0.6168	0.9660	22.6621	13.2291
400	1	0	0.9706	22.1061	0.2366	0.9702	21.7341	3.5332
		0.5	0.9706	22.0767	0.0605	0.9710	22.0290	0.9725
		0.9	0.9710	22.2438	0.0287	0.9704	22.2935	0.5437
	19	0	0.9686	21.3931	0.0114	0.9684	21.4252	0.1989
		0.5	0.9694	21.4013	0.2919	0.9716	22.0499	4.4646
		0.9	0.9730	22.1035	0.5130	0.9714	22.3348	10.4036
	20	0	0.9688	21.3913	0.0077	0.9684	21.4246	0.1958
		0.5	0.9696	21.3779	0.3081	0.9708	22.0374	4.8456
		0.9	0.9724	22.1231	0.5444	0.9716	22.3435	11.1567
2000	1	0	0.9536	14.4745	0.1058	0.9520	14.3888	0.4079
		0.5	0.9526	14.4709	0.0280	0.9532	14.4555	0.2606
		0.9	0.9524	14.4924	0.0285	0.9532	14.5023	0.5404
	19	0	0.9522	14.3787	0.0077	0.9526	14.3805	0.1332
		0.5	0.9512	14.3881	0.2919	0.9508	14.4837	4.5254
		0.9	0.9512	14.6074	0.5124	0.9510	14.5354	10.2952
	20	0	0.9518	14.3781	0.0073	0.9516	14.3811	0.1340
		0.5	0.9510	0.9516	0.9522	0.9516	0.9518	0.9518
		0.9	0.9500	0.9502	0.9520	0.9518	0.9508	0.9516

Table 5.56. $p = 20$, *error type* $= 5$

			PLS			PCR		
n	a	psi	coverage	length	penalty	coverage	length	penalty
200	1	0	0.9626	20.7535	17.2850	0.9622	21.5083	9.7214
		0.5	0.9620	20.7995	16.8774	0.9650	21.9071	13.8680
		0.9	0.9612	20.7884	16.9784	0.9640	22.0386	15.3514
	19	0	0.9618	20.6527	13.9186	0.9624	20.7186	0.2850
		0.5	0.9612	20.7913	16.8766	0.9628	21.8958	13.8872
		0.9	0.9614	20.7874	16.9740	0.9642	22.0336	15.3400
	20	0	0.9620	20.6519	13.8592	0.9624	20.7156	0.2666
		0.5	0.9612	20.7871	16.9810	0.9642	22.0372	15.3776
		0.9	0.9614	20.7875	16.9806	0.9644	22.0420	15.3904
400	1	0	0.9684	21.3969	16.6310	0.9702	21.5813	5.2444
		0.5	0.9686	21.4260	16.7588	0.9694	21.9336	12.5974
		0.9	0.9682	21.4241	16.9818	0.9706	22.0992	15.4044
	19	0	0.9688	21.3903	14.0690	0.9686	21.4066	0.0936
		0.5	0.9686	21.4270	16.7698	0.9690	21.9374	12.6138
		0.9	0.9680	21.4251	16.9822	0.9698	22.1002	15.3944
	20	0	0.9688	21.3904	14.0038	0.9686	21.4003	0.0868
		0.5	0.9682	21.4242	16.9848	0.9710	22.1093	15.5170
		0.9	0.9680	21.4245	16.9828	0.9712	22.1092	15.5130
2000	1	0	0.9518	14.3782	15.2284	0.9512	14.3817	0.3224
		0.5	0.9518	14.3785	15.2266	0.9524	14.3955	3.4098
		0.9	0.9518	14.3784	16.9608	0.9516	14.4749	15.2692
	19	0	0.9518	14.3782	14.4894	0.9518	14.3782	0.0030
		0.5	0.9518	14.3781	15.3130	0.9518	14.3933	3.4486
		0.9	0.9522	14.3784	16.9690	0.9520	14.4758	15.2606
	20	0	0.9518	14.3782	14.4422	0.9518	14.3789	0.0036
		0.5	14.3839	14.4814	14.3784	14.4791	14.3782	14.3782
		0.9	14.6314	14.5370	14.3783	14.4789	14.3592	14.3643

Table 5.57. $p = 20$, *error type* $= 5$

			Ii			I-Min		
n	a	psi	coverage	length	penalty	coverage	length	penalty
200	1	0	0.9644	21.6298	2.7798	0.9650	21.3919	3.8216
		0.5	0.9638	21.5698	2.7520	0.9632	21.3876	3.6764
		0.9	0.9636	21.5948	2.4558	0.9632	21.4090	3.2536
	19	0	0.9612	20.6266	-0.2444	0.9616	20.6523	-0.0214
		0.5	0.9604	20.4381	-4.1976	0.9606	20.5022	-3.2844
		0.9	0.9636	21.2594	-13.9578	0.9634	21.1754	-13.1410
	20	0	0.9616	20.5702	-0.3570	0.9618	20.6109	-0.1888
		0.5	0.9592	20.3813	-4.5462	0.9612	20.4453	-3.6432
		0.9	0.9634	21.2391	-14.8162	0.9630	21.1496	-13.9928
400	1	0	0.9706	21.9028	2.7658	0.9702	21.7759	3.8260
		0.5	0.9708	21.8732	2.8916	0.9696	21.7700	3.8158
		0.9	0.9706	21.8695	2.3990	0.9704	21.7653	3.2520
	19	0	0.9688	21.4190	0.0742	0.9686	21.4099	0.1498
		0.5	0.9682	21.2799	-1.3842	0.9682	21.3293	-0.8050
		0.9	0.9702	21.5845	-12.9152	0.9690	21.5619	-12.0424
	20	0	0.9688	21.3898	-0.0028	0.9688	21.3904	-0.0010
		0.5	0.9678	21.2476	-1.5662	0.9686	21.3043	-1.0174
		0.9	0.9690	21.5634	-13.7016	0.9694	21.5489	-12.8310
2000	1	0	0.9518	14.4469	2.7858	0.9524	14.4292	3.8858
		0.5	0.9512	14.4434	2.9658	0.9526	14.4303	3.9016
		0.9	0.9514	14.4416	2.5276	0.9522	14.4300	3.4498
	19	0	0.9514	14.3821	0.0850	0.9514	14.3809	0.1588
		0.5	0.9518	14.3828	0.0830	0.9518	14.3817	0.1576
		0.9	0.9512	14.3644	-8.1498	0.9510	14.3684	-7.0936
	20	0	0.9518	14.3782	0.0000	0.9518	14.3782	0.0000
		0.5	0.3081	5.6141	16.9846	15.6618	0.0000	0.0000
		0.9	0.5409	10.8671	16.9848	15.6486	-8.6810	-7.6342

Table 5.58. $p = 50$, *error type* $= 5$

			LASSO			RIDGE		
n	a	psi	coverage	length	penalty	coverage	length	penalty
500	1	0	0.9758	24.4032	0.2589	0.9730	23.6871	7.4834
		0.5	0.9762	24.3648	0.0434	0.9758	24.3581	1.2459
		0.9	0.9758	24.6002	0.0456	0.9764	24.6575	2.1344
	49	0	0.9698	22.4348	0.0076	0.9704	22.4989	0.2220
		0.5	0.9808	30.8675	4.5726	0.9820	31.4847	230.3264
		0.9	0.9886	52.3307	8.2588	0.9886	53.3699	491.2959
	50	0	0.9698	22.4328	0.0072	0.9700	22.4986	0.2217
		0.5	0.9786	31.4094	4.7065	0.9818	32.0013	239.0520
		0.9	0.9884	53.4085	8.4634	0.9888	54.3898	502.2058
1000	1	0	0.9694	23.1464	0.1855	0.9688	22.6177	2.2190
		0.5	0.9694	23.1346	0.0328	0.9688	23.0961	0.6114
		0.9	0.9700	23.2336	0.0456	0.9698	23.2634	2.3809
	49	0	0.9684	22.2102	0.0072	0.9682	22.2374	0.1738
		0.5	0.9710	28.5856	4.4955	0.9738	28.9385	228.1795
		0.9	0.9816	47.8869	8.1421	0.9810	49.3925	492.7493
	50	0	0.9686	22.2091	0.0072	0.9682	22.2369	0.1748
		0.5	0.9726	29.0773	4.6300	0.9740	29.4207	236.8647
		0.9	0.9816	48.8570	8.3412	0.9808	50.3181	503.4000
5000	1	0	0.9542	14.8694	0.0834	0.9546	14.7622	0.4135
		0.5	0.9552	14.8746	0.0261	0.9542	14.8697	0.3959
		0.9	0.9548	14.8844	0.0456	0.9542	14.8858	2.5505
	49	0	0.9544	14.7483	0.0072	0.9540	14.7515	0.1360
		0.5	0.9544	22.8692	4.4705	0.956	22.8481	227.795
		0.9	0.9506	39.9074	8.0520	0.9538	41.5863	494.0449
	50	0	0.9540	14.7478	0.0073	0.9538	14.7510	0.1363
		0.5	0.9534	23.3133	4.5913	0.9558	23.2098	234.3730
		0.9	0.9506	40.6480	8.2208	0.9538	42.3589	504.3374

Table 5.59. $p = 50$, *error type* $= 5$

			PLS			PCR		
n	a	psi	coverage	length	penalty	coverage	length	penalty
500	1	0	0.9700	22.5805	47.4532	0.9730	23.6569	28.1072
		0.5	0.9708	22.6512	46.9796	0.9758	24.3090	42.0884
		0.9	0.9708	22.6268	46.9996	0.9756	24.4456	44.8080
	49	0	0.9694	22.4335	42.5238	0.9694	22.4347	0.0542
		0.5	0.9712	22.6565	46.9800	0.9758	24.3149	42.0892
		0.9	0.9708	22.6268	46.9992	0.9764	24.4510	44.8520
	50	0	0.9694	22.4332	42.4880	0.9690	22.4335	0.0562
		0.5	0.9706	22.6253	46.9996	0.9760	24.4552	44.8904
		0.9	0.9706	22.6253	46.9994	0.9758	24.4533	44.8832
1000	1	0	0.9692	22.2150	46.8178	0.9672	22.4034	11.3746
		0.5	0.9684	22.2686	46.9288	0.9698	23.0245	39.0052
		0.9	0.9688	22.2598	46.9992	0.9700	23.1708	45.0028
	49	0	0.9682	22.2096	43.0464	0.9682	22.2097	0.0106
		0.5	0.9692	22.2727	46.9288	0.9686	23.0158	38.8416
		0.9	0.9692	22.2606	46.9994	0.9704	23.1692	45.0360
	50	0	0.9682	22.2096	43.0038	0.9682	22.2100	0.0108
		0.5	0.9692	22.2591	46.9994	0.9702	23.1707	45.1392
		0.9	0.9692	22.2591	46.9994	0.9702	23.1720	45.1586
5000	1	0	0.9546	14.7486	45.0298	0.9550	14.7492	0.3450
		0.5	0.9546	14.7485	45.3106	0.9552	14.7594	5.7424
		0.9	0.9552	14.7496	46.9996	0.9546	14.8731	44.9304
	49	0	0.9546	14.7486	43.8572	0.9546	14.7486	0.0000
		0.5	0.9546	14.7486	45.31	0.955	14.7578	5.7258
		0.9	0.9556	14.7500	46.9998	0.9548	14.8722	44.8754
	50	0	0.9546	14.7486	43.8502	0.9546	14.7486	0.0002
		0.5	0.9556	14.7496	47.0000	0.9546	14.8750	45.4536
		0.9	0.9554	14.7496	47.0000	0.9548	14.8754	45.4920

Table 5.60. $p = 50$, *error type* $= 5$

			Ii			I-Min		
n	a	psi	coverage	length	penalty	coverage	length	penalty
500	1	0	0.9738	23.6191	6.3784	0.9728	23.3927	8.5734
		0.5	0.9738	23.6044	6.5390	0.9732	23.3900	8.5750
		0.9	0.9736	23.6133	5.8324	0.9724	23.4058	7.8870
	49	0	0.9704	22.4600	0.0916	0.9700	22.4512	0.1714
		0.5	0.9708	22.2286	-2.4042	0.9706	22.3165	-1.4500
		0.9	0.9716	22.7959	-33.2134	0.9706	22.7720	-31.4164
	50	0	0.9692	22.4328	-0.0012	0.9692	22.4329	-0.0004
		0.5	0.9698	22.1960	-2.5964	0.9694	22.2966	-1.6686
		0.9	0.9716	22.7763	-33.9796	0.9710	22.7567	-32.1914
1000	1	0	0.9692	22.7667	6.3366	0.9692	22.6584	8.5568
		0.5	0.9700	22.7658	6.4900	0.9692	22.6609	8.5340
		0.9	0.9696	22.7649	5.8338	0.9692	22.6602	7.9064
	49	0	0.9686	22.2227	0.0896	0.9682	22.2191	0.1646
		0.5	0.9686	22.2136	-0.0078	0.9682	22.2161	0.1256
		0.9	0.9682	22.2265	-28.2904	0.9684	22.2407	-26.3920
	50	0	0.9682	22.2098	0.0000	0.9682	22.2098	0.0000
		0.5	0.9682	22.1999	-0.1024	0.9682	22.2065	-0.0386
		0.9	0.9690	22.2135	-28.9516	0.9682	22.2288	-27.0778
5000	1	0	0.9542	14.8215	6.2834	0.9540	14.8076	8.5384
		0.5	0.9552	14.8224	6.4320	0.9546	14.8071	8.5568
		0.9	0.9546	14.8208	6.2042	0.9546	14.8067	8.3478
	49	0	0.9546	14.7505	0.0818	0.9546	14.7500	0.1582
		0.5	0.9548	14.7506	0.0818	0.9548	14.7499	0.1610
		0.9	0.9534	14.7183	-10.7004	0.9530	14.7254	-8.7588
	50	0	0.9546	14.7486	0.0000	0.9546	14.7486	0.0000
		0.5	0.9546	14.7486	0.0000	0.9546	14.7486	0.0000
		0.9	0.9534	14.7163	-11.0292	0.9532	14.7244	-9.1016

5.2 D PREDICTION REGION SIMULATION

Table 5.61. Etype = 1, J=5, k=1, $\psi = 0$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0	Cov	0.9134	0.9476	0.9134	0.9134	0.9134
			Len	4.0255	4.2500	4.0256	4.0256	4.0256
100	40	0	Cov	0.9200	0.9226	0.8166	0.9170	0.8462
			Len	3.8556	4.0637	3.4933	4.6253	3.6050
100	100	0	Cov	0.9192	0.8902	0.1500	0.9304	0.7008
			Len	3.7609	3.7709	0.9522	5.0993	2.9472
100	200	0	Cov	0.9096	0.8646	0.0008	0.9350	0.5944
			Len	3.7652	3.6008	0.0027	5.2770	2.4815
400	20	0	Cov	0.9416	0.9476	0.9414	0.9414	0.9414
			Len	3.9175	3.9632	3.9174	3.9174	3.9174
400	40	0	Cov	0.9214	0.9344	0.9202	0.9202	0.9202
			Len	3.8100	3.9102	3.8099	3.8099	3.8099
400	100	0	Cov	0.8888	0.9136	0.8644	0.8794	0.8660
			Len	3.5166	3.7596	3.4823	3.7696	3.4851
400	200	0	Cov	0.8906	0.8932	0.6904	0.8964	0.7694
			Len	3.3802	3.5772	2.8376	4.2251	3.0424
1000	20	0	Cov	0.9456	0.9462	0.9458	0.9458	0.9458
			Len	3.9033	3.9203	3.9033	3.9033	3.9033
1000	40	0	Cov	0.9380	0.9430	0.9380	0.9380	0.9380
			Len	3.8623	3.9003	3.8621	3.8621	3.8621
1000	100	0	Cov	0.9202	0.9358	0.9180	0.9180	0.9180
			Len	3.7383	3.8389	3.7381	3.7381	3.7381
1000	200	0	Cov	0.8804	0.9220	0.8780	0.8780	0.8780
			Len	3.5249	3.7369	3.5248	3.5248	3.5248

Table 5.62. Etype = 1, J=5, k=1, $\psi = 1/\sqrt{p}$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.2236	Cov	0.9208	0.9584	0.9174	0.9174	0.9174
			Len	4.0240	4.3435	4.0237	4.0237	4.0237
100	40	0.1581	Cov	0.9178	0.9540	0.8170	0.9208	0.8464
			Len	3.8452	4.3344	3.4831	4.4528	3.5992
100	100	0.1	Cov	0.9116	0.9476	0.1444	0.9238	0.7058
			Len	3.7663	4.2949	0.9797	4.9182	2.9537
100	200	0.07	Cov	0.9174	0.9496	0.0014	0.9280	0.6012
			Len	3.7683	4.2563	0.0040	5.1525	2.4942
400	20	0.2236	Cov	0.9374	0.9468	0.9372	0.9372	0.9372
			Len	3.9153	3.9857	3.9151	3.9151	3.9151
400	40	0.1581	Cov	0.9328	0.9472	0.9334	0.9334	0.9334
			Len	3.8133	3.9643	3.8132	3.8132	3.8132
400	100	0.1	Cov	0.8866	0.9406	0.8582	0.8824	0.8592
			Len	3.5177	3.9206	3.4824	3.7397	3.4846
400	200	0.07	Cov	0.8826	0.9422	0.6842	0.8950	0.7514
			Len	3.3844	3.9288	2.8392	4.1530	3.0441
1000	20	0.2236	Cov	0.9394	0.9432	0.9388	0.9388	0.9388
			Len	3.9037	3.9304	3.9035	3.9035	3.9035
1000	40	0.1581	Cov	0.9414	0.9472	0.9402	0.9402	0.9402
			Len	3.8612	3.9212	3.8611	3.8611	3.8611
1000	100	0.1	Cov	0.9278	0.9474	0.9260	0.9260	0.9260
			Len	3.7375	3.8954	3.7372	3.7372	3.7372
1000	200	0.07	Cov	0.8850	0.9426	0.8822	0.8822	0.8822
			Len	3.5252	3.8465	3.5250	3.5250	3.5250

Table 5.63. Etype = 1, J=5, k=1, $\psi = 0.9$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.9	Cov	0.9642	0.9650	0.9226	0.9226	0.9226
			Len	4.4113	4.4064	4.0222	4.0222	4.0222
100	40	0.9	Cov	0.9638	0.9626	0.8072	0.9288	0.8374
			Len	4.4138	4.3972	3.4852	4.0367	3.5954
100	100	0.9	Cov	0.9666	0.9592	0.1518	0.9370	0.7088
			Len	4.4616	4.3785	0.9773	4.0615	2.9440
100	200	0.9	Cov	0.9700	0.9588	0.0016	0.9438	0.6036
			Len	4.5267	4.3484	0.0035	4.0767	2.4870
400	20	0.9	Cov	0.9562	0.9538	0.9446	0.9446	0.9446
			Len	3.9962	3.9927	3.9136	3.9136	3.9136
400	40	0.9	Cov	0.9516	0.9516	0.9318	0.9318	0.9318
			Len	4.0012	3.9892	3.8130	3.8130	3.8130
400	100	0.9	Cov	0.9516	0.9488	0.8738	0.9028	0.8724
			Len	4.0143	3.9821	3.4755	3.5899	3.4787
400	200	0.9	Cov	0.9570	0.9508	0.6740	0.9036	0.7546
			Len	4.0203	3.9735	2.8373	3.6016	3.0397
1000	20	0.9	Cov	0.9512	0.9492	0.9442	0.9442	0.9442
			Len	3.9383	3.9349	3.9047	3.9047	3.9047
1000	40	0.9	Cov	0.9516	0.9490	0.9376	0.9376	0.9376
			Len	3.9406	3.9315	3.8620	3.8620	3.8620
1000	100	0.9	Cov	0.9496	0.9492	0.9226	0.9226	0.9226
			Len	3.9431	3.9260	3.7372	3.7372	3.7372
1000	200	0.9	Cov	0.9512	0.9520	0.8860	0.8860	0.8860
			Len	3.9522	3.9268	3.5275	3.5275	3.5275

Table 5.64. Etype = 1, J=5, k=19, $\psi = 0$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0	Cov	0.9828	0.9832	0.9832	0.9832	0.9832
			Len	5.7131	5.7094	5.7094	5.7094	5.7094
100	40	0	Cov	0.9854	0.9782	0.9364	0.9740	0.9796
			Len	12.7635	6.2476	4.9307	15.0372	5.9440
100	100	0	Cov	0.9792	0.9656	0.2104	0.9814	0.9680
			Len	15.8699	8.4696	1.4720	20.0538	6.6593
100	200	0	Cov	0.9788	0.9542	0.0006	0.9792	0.9154
			Len	17.1839	10.2816	0.0080	21.3345	7.4098
400	20	0	Cov	0.9760	0.9758	0.9758	0.9758	0.9758
			Len	4.6951	4.6929	4.6929	4.6929	4.6929
400	40	0	Cov	0.9678	0.9716	0.9670	0.9670	0.9670
			Len	4.5804	4.6395	4.5788	4.5788	4.5788
400	100	0	Cov	0.9420	0.9606	0.9248	0.8946	0.9260
			Len	4.2338	4.4501	4.1750	7.3308	4.1804
400	200	0	Cov	0.9438	0.9416	0.7628	0.9160	0.8462
			Len	4.1931	4.2513	3.4107	12.4192	3.7043
1000	20	0	Cov	0.9610	0.9604	0.9604	0.9604	0.9604
			Len	4.1756	4.1742	4.1742	4.1742	4.1742
1000	40	0	Cov	0.9566	0.9576	0.9578	0.9578	0.9578
			Len	4.1407	4.1606	4.1388	4.1388	4.1388
1000	100	0	Cov	0.9406	0.9512	0.9386	0.9386	0.9386
			Len	4.0089	4.0956	4.0071	4.0071	4.0071
1000	200	0	Cov	0.9082	0.9392	0.9072	0.9072	0.9072
			Len	3.7783	3.9847	3.7761	3.7761	3.7761

Table 5.65. Etype = 1, J=5, k=19, $\psi = 1/\sqrt{p}$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.2236	Cov	0.9876	0.9862	0.9862	0.9862	0.9862
			Len	5.7789	5.7056	5.7056	5.7056	5.7056
100	40	0.1581	Cov	0.9948	0.9706	0.9324	0.9720	0.9706
			Len	46.0662	9.2893	4.9413	10.2913	6.7200
100	100	0.1	Cov	0.9916	0.9436	0.2166	0.9796	0.9302
			Len	58.3789	14.1499	1.4920	16.7052	8.7784
100	200	0.07	Cov	0.9910	0.9242	0.0006	0.9824	0.8756
			Len	64.5434	16.7618	0.0113	19.6203	10.2351
400	20	0.2236	Cov	0.9768	0.9792	0.9792	0.9792	0.9792
			Len	4.7434	4.6887	4.6887	4.6887	4.6887
400	40	0.1581	Cov	0.9704	0.9680	0.9642	0.9642	0.9642
			Len	4.7036	4.6516	4.5786	4.5786	4.5786
400	100	0.1	Cov	0.9640	0.9654	0.9212	0.8980	0.9230
			Len	4.6206	4.5712	4.1806	6.4729	4.1855
400	200	0.07	Cov	0.9626	0.9582	0.7728	0.9154	0.8486
			Len	4.5386	4.4916	3.4093	11.2157	3.7047
1000	20	0.2236	Cov	0.9632	0.9662	0.9662	0.9662	0.9662
			Len	4.2243	4.1791	4.1791	4.1791	4.1791
1000	40	0.1581	Cov	0.9556	0.9560	0.9516	0.9516	0.9516
			Len	4.2093	4.1645	4.1394	4.1394	4.1394
1000	100	0.1	Cov	0.9508	0.9522	0.9400	0.9400	0.9400
			Len	4.1809	4.1370	4.0073	4.0073	4.0073
1000	200	0.07	Cov	0.9534	0.9524	0.9040	0.9040	0.9040
			Len	4.1529	4.1109	3.7798	3.7798	3.7798

Table 5.66. Etype = 1, J=5, k=19, $\psi = 0.9$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.9	Cov	0.9832	0.9708	0.9624	0.9624	0.9624
			Len	12.2210	5.2090	4.7893	4.7893	4.7893
100	40	0.9	Cov	0.9898	0.9684	0.8774	0.9636	0.9042
			Len	17.4320	5.5680	4.1075	4.8189	4.2839
100	100	0.9	Cov	0.9872	0.9674	0.1718	0.9642	0.7864
			Len	27.5161	5.5268	1.1419	4.9168	3.5842
100	200	0.9	Cov	0.9842	0.9522	0.0012	0.9620	0.6722
			Len	39.9833	5.2621	0.0043	4.9780	3.0999
400	20	0.9	Cov	0.9710	0.9638	0.9682	0.9682	0.9682
			Len	10.2394	4.6843	4.3824	4.3824	4.3824
400	40	0.9	Cov	0.9684	0.9558	0.9466	0.9466	0.9466
			Len	14.2887	5.0905	4.1862	4.1862	4.1862
400	100	0.9	Cov	0.9728	0.9576	0.8916	0.9174	0.8984
			Len	23.0034	5.1294	3.7885	3.9407	3.7928
400	200	0.9	Cov	0.9718	0.9630	0.7248	0.9240	0.7980
			Len	31.8755	5.0455	3.0778	4.0212	3.3279
1000	20	0.9	Cov	0.9610	0.9596	0.9612	0.9612	0.9612
			Len	9.6668	4.4550	4.1652	4.1652	4.1652
1000	40	0.9	Cov	0.9642	0.9548	0.9552	0.9552	0.9552
			Len	13.5612	4.9118	4.0767	4.0767	4.0767
1000	100	0.9	Cov	0.9620	0.9560	0.9426	0.9426	0.9426
			Len	21.9234	4.9980	3.9335	3.9335	3.9335
1000	200	0.9	Cov	0.9572	0.9532	0.8978	0.8978	0.8978
			Len	30.2794	5.0038	3.6956	3.6956	3.6956

Table 5.67. Etype = 1, J=5, k=p-1, $\psi = 0$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	40	0	Cov	0.9824	0.9302	0.9330	0.9636	0.9044
			Len	26.9963	18.0634	4.9227	20.6143	17.3405
100	100	0	Cov	0.9270	0.7920	0.1574	0.9176	0.6908
			Len	35.0791	24.5700	1.3012	32.7191	22.2295
100	200	0	Cov	0.9206	0.7478	0.0004	0.9236	0.5814
			Len	49.9075	34.7351	0.0171	49.1150	28.9191
400	40	0	Cov	0.9784	0.9792	0.9792	0.9792	0.9792
			Len	4.9012	4.8971	4.8971	4.8971	4.8971
400	100	0	Cov	0.9814	0.9556	0.9710	0.9428	0.9252
			Len	33.2923	18.2836	5.1260	17.4122	17.7642
400	200	0	Cov	0.8970	0.7744	0.6930	0.8588	0.7040
			Len	40.7452	28.1340	2.9547	32.9458	25.6157
1000	40	0	Cov	0.9722	0.9696	0.9696	0.9696	0.9696
			Len	4.4963	4.4919	4.4919	4.4919	4.4919
1000	100	0	Cov	0.9772	0.9764	0.9764	0.9764	0.9764
			Len	4.8863	4.8752	4.8752	4.8752	4.8752
1000	200	0	Cov	0.9830	0.9826	0.9826	0.9826	0.9826
			Len	5.2989	5.2696	5.2696	5.2696	5.2696

Table 5.68. Etype = 1, J=5, k=p-1, $\psi = 1/\sqrt{p}$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	40	0.1581	Cov	0.9920	0.9480	0.9336	0.9876	0.8858
			Len	112.1507	23.6966	4.9464	5.7811	19.4947
100	100	0.1	Cov	0.9934	0.9204	0.1986	0.9882	0.8004
			Len	332.4712	71.8206	1.3872	6.1844	50.1935
100	200	0.07	Cov	0.9890	0.9034	0.0018	0.9850	0.7194
			Len	713.1969	150.8966	0.0056	7.0242	92.6591
400	40	0.1581	Cov	0.9806	0.9824	0.9824	0.9824	0.9824
			Len	6.9788	4.9038	4.9038	4.9038	4.9038
400	100	0.1	Cov	0.9896	0.9622	0.9708	0.9808	0.9212
			Len	119.7160	20.7583	5.1276	5.3146	17.8330
400	200	0.07	Cov	0.9898	0.9382	0.8584	0.9868	0.8320
			Len	346.0919	67.4367	4.1871	5.4675	48.1354
1000	40	0.1581	Cov	0.9678	0.9710	0.9710	0.9710	0.9710
			Len	6.1985	4.4908	4.4908	4.4908	4.4908
1000	100	0.1	Cov	0.9836	0.9748	0.9748	0.9748	0.9748
			Len	16.3194	4.8825	4.8825	4.8825	4.8825
1000	200	0.07	Cov	0.9908	0.9800	0.9800	0.9800	0.9800
			Len	36.3881	5.2731	5.2731	5.2731	5.2731

Table 5.69. Etype = 1, J=5, k=p-1, $\psi = 0.9$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	40	0.9	Cov	0.9918	0.9712	0.9010	0.9778	0.9210
			Len	38.6312	8.1128	4.4702	5.1697	4.7812
100	100	0.9	Cov	0.9964	0.9780	0.1990	0.9874	0.8204
			Len	182.9808	18.4703	1.3644	5.6596	6.6923
100	200	0.9	Cov	0.9958	0.9712	0.0012	0.9904	0.7228
			Len	887.4072	31.6135	0.0050	5.6928	10.6633
400	40	0.9	Cov	0.9812	0.9734	0.9672	0.9672	0.9672
			Len	33.5145	7.6971	4.6522	4.6522	4.6522
400	100	0.9	Cov	0.9904	0.9824	0.9538	0.9710	0.9480
			Len	150.3718	17.9883	4.7249	4.8803	4.7920
400	200	0.9	Cov	0.9952	0.9904	0.8548	0.9874	0.8638
			Len	447.9935	35.5057	4.1642	5.2721	6.4100
1000	40	0.9	Cov	0.9760	0.9706	0.9708	0.9708	0.9708
			Len	31.4592	7.3848	4.4890	4.4890	4.4890
1000	100	0.9	Cov	0.9874	0.9850	0.9790	0.9790	0.9790
			Len	141.7333	17.3959	4.8763	4.8763	4.8763
1000	200	0.9	Cov	0.9958	0.9910	0.9826	0.9826	0.9826
			Len	448.5471	36.6703	5.2712	5.2712	5.2712

Table 5.70. Etype = 1, J=10, k=1, $\psi = 0$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0	Cov	0.9440	0.9468	0.9162	0.9386	0.9244
			Len	4.1888	4.2620	4.0218	5.0190	4.0739
100	40	0	Cov	0.9516	0.9424	0.8198	0.9510	0.9056
			Len	4.1679	4.1531	3.4835	5.4312	3.8646
100	100	0	Cov	0.9428	0.9168	0.2762	0.9464	0.8506
			Len	4.1594	3.9978	1.4048	5.7042	3.5653
100	200	0	Cov	0.9462	0.9148	0.0340	0.9502	0.8078
			Len	4.1878	3.9064	0.1381	5.8263	3.3569
400	20	0	Cov	0.9396	0.9420	0.9390	0.9390	0.9390
			Len	3.9155	3.9629	3.9155	3.9155	3.9155
400	40	0	Cov	0.9304	0.9438	0.9304	0.9304	0.9304
			Len	3.8128	3.9135	3.8127	3.8127	3.8127
400	100	0	Cov	0.9284	0.9264	0.8724	0.9204	0.8892
			Len	3.7120	3.7927	3.4769	4.5815	3.5604
400	200	0	Cov	0.9230	0.9068	0.6780	0.9226	0.8332
			Len	3.6776	3.6872	2.8430	4.8829	3.3347
1000	20	0	Cov	0.9484	0.9486	0.9470	0.9470	0.9470
			Len	3.9029	3.9209	3.9024	3.9024	3.9024
1000	40	0	Cov	0.9450	0.9514	0.9438	0.9438	0.9438
			Len	3.8616	3.8992	3.8615	3.8615	3.8615
1000	100	0	Cov	0.9252	0.9396	0.9248	0.9248	0.9248
			Len	3.7383	3.8389	3.7383	3.7383	3.7383
1000	200	0	Cov	0.9248	0.9314	0.8868	0.9162	0.8956
			Len	3.6537	3.7575	3.5263	4.3486	3.5590

Table 5.71. Etype = 1, J=10, k=1, $\psi = 1/\sqrt{p}$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.2236	Cov	0.9464	0.9600	0.9114	0.9440	0.9224
			Len	4.1943	4.3740	4.0244	4.7389	4.0838
100	40	0.1581	Cov	0.9502	0.9624	0.8076	0.9518	0.9016
			Len	4.1757	4.3547	3.4863	5.1220	3.8685
100	100	0.1	Cov	0.9504	0.9544	0.3054	0.9522	0.8532
			Len	4.1731	4.3061	1.4898	5.4600	3.5917
100	200	0.07	Cov	0.9444	0.9482	0.0506	0.9540	0.8180
			Len	4.1890	4.2468	0.1974	5.6412	3.3618
400	20	0.2236	Cov	0.9474	0.9504	0.9462	0.9462	0.9462
			Len	3.9164	3.9829	3.9158	3.9158	3.9158
400	40	0.1581	Cov	0.9290	0.9480	0.9272	0.9272	0.9272
			Len	3.8162	3.9670	3.8160	3.8160	3.8160
400	100	0.1	Cov	0.9300	0.9498	0.8714	0.9196	0.8862
			Len	3.7121	3.9625	3.4785	4.4436	3.5612
400	200	0.07	Cov	0.9200	0.9430	0.6846	0.9216	0.8368
			Len	3.6744	3.9545	2.8388	4.7549	3.3313
1000	20	0.2236	Cov	0.9370	0.9406	0.9358	0.9358	0.9358
			Len	3.9034	3.9297	3.9031	3.9031	3.9031
1000	40	0.1581	Cov	0.9454	0.9460	0.9460	0.9460	0.9460
			Len	3.8613	3.9215	3.8611	3.8611	3.8611
1000	100	0.1	Cov	0.9234	0.9448	0.9230	0.9230	0.9230
			Len	3.7374	3.8952	3.7372	3.7372	3.7372
1000	200	0.07	Cov	0.9188	0.9398	0.8868	0.9178	0.8866
			Len	3.6540	3.9039	3.5263	4.2717	3.5587

Table 5.72. Etype = 1, J=10, k=1, $\psi = 0.9$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.9	Cov	0.9638	0.9624	0.9102	0.9530	0.9198
			Len	4.4110	4.4052	4.0230	4.2754	4.0707
100	40	0.9	Cov	0.9632	0.9620	0.8164	0.9546	0.8972
			Len	4.4206	4.4006	3.4918	4.2898	3.8545
100	100	0.9	Cov	0.9622	0.9534	0.2912	0.9544	0.8392
			Len	4.8641	4.3694	1.4668	4.3063	3.5606
100	200	0.9	Cov	0.9710	0.9572	0.0528	0.9654	0.8084
			Len	6.4575	4.3565	0.1735	4.3384	3.3489
400	20	0.9	Cov	0.9510	0.9532	0.9396	0.9396	0.9396
			Len	4.0018	3.9980	3.9191	3.9191	3.9191
400	40	0.9	Cov	0.9506	0.9516	0.9272	0.9272	0.9272
			Len	4.0035	3.9919	3.8110	3.8110	3.8110
400	100	0.9	Cov	0.9514	0.9482	0.8652	0.9324	0.8832
			Len	4.0116	3.9785	3.4758	3.8157	3.5584
400	200	0.9	Cov	0.9532	0.9474	0.6806	0.9328	0.8314
			Len	4.0226	3.9769	2.8386	3.8246	3.3312
1000	20	0.9	Cov	0.9484	0.9486	0.9436	0.9436	0.9436
			Len	3.9367	3.9331	3.9030	3.9030	3.9030
1000	40	0.9	Cov	0.9488	0.9476	0.9376	0.9376	0.9376
			Len	3.9389	3.9298	3.8618	3.8618	3.8618
1000	100	0.9	Cov	0.9574	0.9542	0.9262	0.9262	0.9262
			Len	3.9480	3.9313	3.7410	3.7410	3.7410
1000	200	0.9	Cov	0.9512	0.9494	0.8922	0.9300	0.8940
			Len	3.9494	3.9239	3.5252	3.7451	3.5572

Table 5.73. Etype = 1, J=10, k=19, $\psi = 0$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0	Cov	0.9828	0.9520	0.9666	0.9672	0.9430
			Len	19.6154	13.2498	4.9831	15.0115	13.8313
100	40	0	Cov	0.9800	0.9560	0.8970	0.9722	0.9398
			Len	19.6622	13.3625	4.2952	18.7955	13.8378
100	100	0	Cov	0.9824	0.9492	0.3466	0.9790	0.9384
			Len	19.5710	13.4861	2.1035	20.7464	13.6517
100	200	0	Cov	0.9780	0.9374	0.0408	0.9740	0.9070
			Len	19.1486	13.5431	0.3431	20.6873	13.0348
400	20	0	Cov	0.9764	0.9772	0.9772	0.9772	0.9772
			Len	4.7007	4.6990	4.6990	4.6990	4.6990
400	40	0	Cov	0.9708	0.9742	0.9700	0.9700	0.9700
			Len	4.5742	4.6335	4.5725	4.5725	4.5725
400	100	0	Cov	0.9608	0.9608	0.9222	0.9422	0.9426
			Len	4.6381	4.5222	4.1752	14.0265	4.3326
400	200	0	Cov	0.9654	0.9546	0.7672	0.9596	0.9248
			Len	4.7627	4.4426	3.4101	16.6155	4.1621
1000	20	0	Cov	0.9552	0.9554	0.9554	0.9554	0.9554
			Len	4.1784	4.1766	4.1766	4.1766	4.1766
1000	40	0	Cov	0.9562	0.9560	0.9560	0.9560	0.9560
			Len	4.1414	4.1605	4.1392	4.1392	4.1392
1000	100	0	Cov	0.9442	0.9520	0.9416	0.9416	0.9416
			Len	4.0090	4.0946	4.0067	4.0067	4.0067
1000	200	0	Cov	0.9428	0.9432	0.9044	0.9100	0.9132
			Len	3.9423	4.0049	3.7761	11.0840	3.8189

Table 5.74. Etype = 1, J=10, k=19, $\psi = 1/\sqrt{p}$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.2236	Cov	0.9900	0.9612	0.9652	0.9846	0.9378
			Len	74.0058	15.0151	4.9754	5.3109	14.6745
100	40	0.1581	Cov	0.9868	0.9574	0.9008	0.9808	0.9310
			Len	76.6257	17.6423	4.3069	12.2907	16.1301
100	100	0.1	Cov	0.9844	0.9338	0.3936	0.9808	0.9008
			Len	78.5815	20.1753	2.1790	17.4904	17.6116
100	200	0.07	Cov	0.9864	0.9262	0.0604	0.9822	0.8792
			Len	82.8101	22.4902	0.4862	19.6893	18.1515
400	20	0.2236	Cov	0.9734	0.9750	0.9750	0.9750	0.9750
			Len	4.7504	4.6969	4.6969	4.6969	4.6969
400	40	0.1581	Cov	0.9748	0.9750	0.9702	0.9702	0.9702
			Len	4.7065	4.6548	4.5788	4.5788	4.5788
400	100	0.1	Cov	0.9732	0.9682	0.9320	0.9546	0.9490
			Len	4.7559	4.5721	4.1774	11.7475	4.3342
400	200	0.07	Cov	0.9718	0.9636	0.7636	0.9542	0.9232
			Len	6.5855	4.5206	3.4146	14.9415	4.1719
1000	20	0.2236	Cov	0.9612	0.9598	0.9598	0.9598	0.9598
			Len	4.2192	4.1744	4.1744	4.1744	4.1744
1000	40	0.1581	Cov	0.9518	0.9524	0.9484	0.9484	0.9484
			Len	4.2074	4.1633	4.1367	4.1367	4.1367
1000	100	0.1	Cov	0.9554	0.9542	0.9392	0.9392	0.9392
			Len	4.1762	4.1344	4.0038	4.0038	4.0038
1000	200	0.07	Cov	0.9516	0.9474	0.9034	0.9150	0.9096
			Len	4.1528	4.1093	3.7772	10.0048	3.8203

Table 5.75. Etype = 1, J=10, k=19, $\psi = 0.9$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.9	Cov	0.9842	0.9710	0.9608	0.9780	0.9626
			Len	45.5575	5.2322	4.7840	5.0756	4.9286
100	40	0.9	Cov	0.9866	0.9712	0.8760	0.9814	0.9492
			Len	42.4335	5.5499	4.0903	5.1879	4.7386
100	100	0.9	Cov	0.9836	0.9604	0.3412	0.9796	0.9088
			Len	123.8216	5.4754	1.7120	5.2963	4.4809
100	200	0.9	Cov	0.9890	0.9564	0.0578	0.9786	0.8778
			Len	335.8509	5.1968	0.2096	5.3283	4.2461
400	20	0.9	Cov	0.9720	0.9602	0.9602	0.9602	0.9602
			Len	10.2370	4.6849	4.3789	4.3789	4.3789
400	40	0.9	Cov	0.9698	0.9616	0.9536	0.9536	0.9536
			Len	14.2814	5.0807	4.1792	4.1792	4.1792
400	100	0.9	Cov	0.9696	0.9582	0.8886	0.9468	0.9040
			Len	22.9928	5.1238	3.7880	4.2913	3.9122
400	200	0.9	Cov	0.9670	0.9564	0.7188	0.9508	0.8748
			Len	31.8672	5.0395	3.0756	4.3547	3.7014
1000	20	0.9	Cov	0.9628	0.9580	0.9590	0.9590	0.9590
			Len	9.6734	4.4579	4.1692	4.1692	4.1692
1000	40	0.9	Cov	0.9606	0.9546	0.9444	0.9444	0.9444
			Len	13.5609	4.9206	4.0799	4.0799	4.0799
1000	100	0.9	Cov	0.9580	0.9576	0.9376	0.9376	0.9376
			Len	21.9414	4.9994	3.9317	3.9317	3.9317
1000	200	0.9	Cov	0.9576	0.9546	0.8958	0.9366	0.9028
			Len	30.2701	4.9982	3.7022	4.0430	3.7452

Table 5.76. Etype = 1, J=10, k=p-1, $\psi = 0$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	40	0	Cov	0.9788	0.9320	0.8792	0.9714	0.9222
			Len	28.7166	21.4549	4.2040	25.6768	21.6615
100	100	0	Cov	0.9510	0.8676	0.2784	0.9492	0.8402
			Len	40.4687	30.9453	2.6627	39.3382	30.9364
100	200	0	Cov	0.9500	0.8434	0.0304	0.9442	0.7964
			Len	56.7788	43.8308	0.8607	56.3640	42.2023
400	40	0	Cov	0.9770	0.9786	0.9786	0.9786	0.9786
			Len	4.9127	4.9071	4.9071	4.9071	4.9071
400	100	0	Cov	0.9786	0.9398	0.9408	0.9670	0.9118
			Len	41.0935	29.3346	4.4795	32.7964	28.7049
400	200	0	Cov	0.9300	0.8498	0.6936	0.9140	0.8118
			Len	49.5575	37.7931	2.9462	44.8739	36.5594
1000	40	0	Cov	0.9760	0.9756	0.9756	0.9756	0.9756
			Len	4.4901	4.4868	4.4868	4.4868	4.4868
1000	100	0	Cov	0.9820	0.9816	0.9816	0.9816	0.9816
			Len	4.8973	4.8849	4.8849	4.8849	4.8849
1000	200	0	Cov	0.9772	0.9422	0.9562	0.9528	0.9296
			Len	56.0230	38.0741	4.6018	41.0338	37.1150

Table 5.77. Etype = 1, J=10, k=p-1, $\psi = 1/\sqrt{p}$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	40	0.1581	Cov	0.9872	0.9470	0.8962	0.9844	0.9044
			Len	160.2461	36.4689	4.3119	5.4261	33.5587
100	100	0.1	Cov	0.9868	0.9280	0.3576	0.9824	0.8650
			Len	411.7656	97.0153	1.8100	5.8605	85.7560
100	200	0.07	Cov	0.9872	0.9166	0.0642	0.9854	0.8184
			Len	871.3292	210.0977	0.2412	6.7370	166.1195
400	40	0.1581	Cov	0.9780	0.9774	0.9774	0.9774	0.9774
			Len	6.9829	4.9084	4.9084	4.9084	4.9084
400	100	0.1	Cov	0.9888	0.9556	0.9450	0.9790	0.8966
			Len	258.3051	45.6545	4.4795	4.9824	37.9356
400	200	0.07	Cov	0.9854	0.9408	0.7880	0.9800	0.8570
			Len	567.3311	104.8690	3.6487	5.1686	80.8306
1000	40	0.1581	Cov	0.9756	0.9694	0.9694	0.9694	0.9694
			Len	6.1908	4.4878	4.4878	4.4878	4.4878
1000	100	0.1	Cov	0.9830	0.9772	0.9772	0.9772	0.9772
			Len	16.3258	4.8815	4.8815	4.8815	4.8815
1000	200	0.07	Cov	0.9838	0.9606	0.9572	0.9814	0.9028
			Len	362.0462	56.1382	4.6009	4.9373	46.3527

Table 5.78. Etype = 1, J=10, k=p-1, $\psi = 0.9$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	40	0.9	Cov	0.9918	0.9686	0.8908	0.9846	0.9304
			Len	191.3079	7.7374	4.3038	5.2792	5.8268
100	100	0.9	Cov	0.9904	0.9624	0.3562	0.9870	0.8748
			Len	1635.0250	15.6466	1.7977	5.2822	10.5333
100	200	0.9	Cov	0.9902	0.9532	0.0578	0.9868	0.8394
			Len	7603.4220	28.5576	0.2127	5.2776	19.0490
400	40	0.9	Cov	0.9866	0.9760	0.9708	0.9708	0.9708
			Len	33.5314	7.6866	4.6538	4.6538	4.6538
400	100	0.9	Cov	0.9900	0.9766	0.9446	0.9820	0.9274
			Len	142.0953	16.9348	4.4710	4.9001	5.8303
400	200	0.9	Cov	0.9870	0.9754	0.7922	0.9784	0.8648
			Len	392.9536	31.1084	3.6533	4.9087	9.4875
1000	40	0.9	Cov	0.9794	0.9704	0.9680	0.9680	0.9680
			Len	31.4676	7.3765	4.4822	4.4822	4.4822
1000	100	0.9	Cov	0.9914	0.9822	0.9762	0.9762	0.9762
			Len	141.6904	17.3494	4.8835	4.8835	4.8835
1000	200	0.9	Cov	0.9898	0.9840	0.9584	0.9842	0.9222
			Len	391.2974	32.1430	4.6027	4.8814	6.4369

Table 5.79. Etype = 1, J=20, k=1, $\psi = 0$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0	Cov	0.9636	0.9582	0.9246	0.9616	0.9514
			Len	4.3655	4.3185	4.0200	5.6917	4.2138
100	40	0	Cov	0.9576	0.9482	0.8270	0.9564	0.9344
			Len	4.3824	4.2639	3.5121	5.9077	4.1394
100	100	0	Cov	0.9660	0.9506	0.5148	0.9654	0.9306
			Len	4.3973	4.1839	2.0984	6.0502	4.0367
100	200	0	Cov	0.9608	0.9402	0.2444	0.9666	0.9084
			Len	4.4489	4.1472	0.9038	6.1067	3.9495
400	20	0	Cov	0.9450	0.9498	0.9452	0.9452	0.9452
			Len	3.9106	3.9567	3.9105	3.9105	3.9105
400	40	0	Cov	0.9386	0.9402	0.9228	0.9326	0.9272
			Len	3.8763	3.9176	3.8127	4.6402	3.8320
400	100	0	Cov	0.9396	0.9300	0.8608	0.9388	0.9064
			Len	3.8534	3.8475	3.4790	5.0949	3.6930
400	200	0	Cov	0.9384	0.9200	0.6912	0.9378	0.8890
			Len	3.8423	3.7854	2.8380	5.2707	3.5843
1000	20	0	Cov	0.9468	0.9480	0.9466	0.9466	0.9466
			Len	3.9037	3.9213	3.9036	3.9036	3.9036
1000	40	0	Cov	0.9432	0.9444	0.9426	0.9426	0.9426
			Len	3.8625	3.8998	3.8625	3.8625	3.8625
1000	100	0	Cov	0.9398	0.9430	0.9250	0.9326	0.9284
			Len	3.7993	3.8472	3.7393	4.5290	3.7559
1000	200	0	Cov	0.9362	0.9294	0.8834	0.9266	0.9066
			Len	3.7762	3.7919	3.5250	4.9037	3.6493

Table 5.80. Etype = 1, J=20, k=1, $\psi = 1/\sqrt{p}$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.2236	Cov	0.9556	0.9566	0.9132	0.9560	0.9382
			Len	4.3817	4.3818	4.0329	5.2342	4.2314
100	40	0.1581	Cov	0.9598	0.9564	0.8392	0.9588	0.9326
			Len	4.4050	4.3522	3.5507	5.5215	4.1499
100	100	0.1	Cov	0.9618	0.9556	0.5930	0.9566	0.9254
			Len	4.4492	4.3167	2.3602	5.7991	4.0499
100	200	0.07	Cov	0.9578	0.9480	0.3504	0.9602	0.9130
			Len	4.4902	4.2651	1.3051	5.9033	3.9610
400	20	0.2236	Cov	0.9370	0.9454	0.9362	0.9362	0.9362
			Len	3.9130	3.9828	3.9127	3.9127	3.9127
400	40	0.1581	Cov	0.9318	0.9442	0.9162	0.9312	0.9210
			Len	3.8762	3.9817	3.8122	4.4414	3.8300
400	100	0.1	Cov	0.9362	0.9498	0.8662	0.9292	0.9070
			Len	3.8543	3.9728	3.4801	4.9007	3.6956
400	200	0.07	Cov	0.9382	0.9466	0.6798	0.9376	0.8898
			Len	3.8512	3.9693	2.8409	5.1079	3.5880
1000	20	0.2236	Cov	0.9456	0.9490	0.9452	0.9452	0.9452
			Len	3.9015	3.9277	3.9012	3.9012	3.9012
1000	40	0.1581	Cov	0.9382	0.9440	0.9370	0.9370	0.9370
			Len	3.8656	3.9233	3.8655	3.8655	3.8655
1000	100	0.1	Cov	0.9390	0.9460	0.9234	0.9370	0.9264
			Len	3.7986	3.9170	3.7381	4.4121	3.7537
1000	200	0.07	Cov	0.9354	0.9478	0.8776	0.9342	0.9048
			Len	3.7753	3.9135	3.5232	4.7754	3.6469

Table 5.81. Etype = 1, J=20, k=1, $\psi = 0.9$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.9	Cov	0.9682	0.9652	0.9182	0.9624	0.9440
			Len	4.7043	4.4076	4.0274	4.4018	4.2083
100	40	0.9	Cov	0.9640	0.9616	0.8378	0.9596	0.9330
			Len	6.6393	4.3988	3.5224	4.4132	4.1176
100	100	0.9	Cov	0.9676	0.9640	0.5678	0.9660	0.9202
			Len	17.0619	4.3750	2.2187	4.4227	3.9871
100	200	0.9	Cov	0.9690	0.9534	0.3468	0.9612	0.8962
			Len	33.1604	4.3551	1.1268	4.4456	3.9040
400	20	0.9	Cov	0.9486	0.9482	0.9378	0.9378	0.9378
			Len	3.9942	3.9910	3.9139	3.9139	3.9139
400	40	0.9	Cov	0.9578	0.9570	0.9316	0.9454	0.9330
			Len	4.0023	3.9886	3.8105	3.9230	3.8290
400	100	0.9	Cov	0.9486	0.9450	0.8656	0.9426	0.9058
			Len	4.0133	3.9815	3.4800	3.9293	3.6947
400	200	0.9	Cov	0.9506	0.9456	0.6854	0.9384	0.8914
			Len	4.0205	3.9751	2.8387	3.9315	3.5790
1000	20	0.9	Cov	0.9478	0.9478	0.9426	0.9426	0.9426
			Len	3.9359	3.9329	3.9015	3.9015	3.9015
1000	40	0.9	Cov	0.9488	0.9472	0.9404	0.9404	0.9404
			Len	3.9386	3.9300	3.8618	3.8618	3.8618
1000	100	0.9	Cov	0.9492	0.9456	0.9256	0.9390	0.9246
			Len	3.9427	3.9265	3.7388	3.8473	3.7543
1000	200	0.9	Cov	0.9532	0.9518	0.8834	0.9452	0.9082
			Len	3.9505	3.9253	3.5258	3.8541	3.6502

Table 5.82. Etype = 1, J=20, k=19, $\psi = 0$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0	Cov	0.9798	0.9542	0.9542	0.9750	0.9590
			Len	20.5362	15.6045	4.6638	18.8798	17.3232
100	40	0	Cov	0.9814	0.9516	0.8834	0.9782	0.9576
			Len	20.4335	15.5573	4.2912	20.3879	17.2213
100	100	0	Cov	0.9752	0.9480	0.5440	0.9728	0.9428
			Len	20.0507	15.3012	3.6685	20.9439	16.8594
100	200	0	Cov	0.9708	0.9412	0.2478	0.9710	0.9362
			Len	20.0902	15.7641	2.1720	20.7360	16.4131
400	20	0	Cov	0.9804	0.9804	0.9804	0.9804	0.9804
			Len	4.6983	4.6963	4.6963	4.6963	4.6963
400	40	0	Cov	0.9748	0.9746	0.9668	0.9592	0.9758
			Len	5.3919	4.6784	4.5683	13.7161	4.6932
400	100	0	Cov	0.9796	0.9784	0.9310	0.9708	0.9808
			Len	5.8983	4.6743	4.1687	17.6364	4.6941
400	200	0	Cov	0.9762	0.9752	0.7690	0.9714	0.9770
			Len	6.2529	4.6714	3.3990	18.9708	4.6946
1000	20	0	Cov	0.9598	0.9584	0.9584	0.9584	0.9584
			Len	4.1780	4.1761	4.1761	4.1761	4.1761
1000	40	0	Cov	0.9612	0.9612	0.9612	0.9612	0.9612
			Len	4.1388	4.1584	4.1368	4.1368	4.1368
1000	100	0	Cov	0.9576	0.9556	0.9468	0.9346	0.9476
			Len	4.1109	4.1084	4.0097	11.9266	4.0364
1000	200	0	Cov	0.9592	0.9530	0.9110	0.9408	0.9418
			Len	4.1392	4.0661	3.7787	14.8248	3.9515

Table 5.83. Etype = 1, J=20, k=19, $\psi = 1/\sqrt{p}$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.2236	Cov	0.9858	0.9612	0.9550	0.9810	0.9462
			Len	80.6278	18.4959	4.6486	5.1200	25.3737
100	40	0.1581	Cov	0.9830	0.9482	0.8938	0.9792	0.9318
			Len	79.7466	19.9719	4.3527	13.2362	27.2703
100	100	0.1	Cov	0.9814	0.9228	0.6400	0.9772	0.9186
			Len	78.0582	20.9891	4.1651	17.8431	28.7491
100	200	0.07	Cov	0.9816	0.9292	0.3858	0.9770	0.9112
			Len	88.9965	27.3598	3.1568	19.7105	29.2283
400	20	0.2236	Cov	0.9774	0.9756	0.9756	0.9756	0.9756
			Len	4.7517	4.6967	4.6967	4.6967	4.6967
400	40	0.1581	Cov	0.9850	0.9768	0.9678	0.9626	0.9760
			Len	41.0099	5.3323	4.5689	9.1753	4.7545
400	100	0.1	Cov	0.9772	0.9696	0.9284	0.9710	0.9698
			Len	55.1185	7.9266	4.1663	14.6509	4.8947
400	200	0.07	Cov	0.9800	0.9626	0.7786	0.9708	0.9752
			Len	60.0520	10.4504	3.4020	17.0005	5.1311
1000	20	0.2236	Cov	0.9608	0.9604	0.9604	0.9604	0.9604
			Len	4.2203	4.1755	4.1755	4.1755	4.1755
1000	40	0.1581	Cov	0.9556	0.9550	0.9526	0.9526	0.9526
			Len	4.2079	4.1634	4.1369	4.1369	4.1369
1000	100	0.1	Cov	0.9584	0.9554	0.9386	0.9300	0.9454
			Len	4.1787	4.1355	4.0047	10.0153	4.0323
1000	200	0.07	Cov	0.9538	0.9530	0.9104	0.9348	0.9328
			Len	4.1845	4.1105	3.7762	13.2975	3.9488

Table 5.84. Etype = 1, J=20, k=19, $\psi = 0.9$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.9	Cov	0.9838	0.9660	0.9520	0.9832	0.9582
			Len	230.6439	5.5814	4.6429	5.0520	5.5359
100	40	0.9	Cov	0.9860	0.9626	0.8934	0.9796	0.9468
			Len	303.6384	5.5955	4.0591	5.2586	5.4741
100	100	0.9	Cov	0.9838	0.9640	0.6450	0.9830	0.9344
			Len	518.9842	5.4708	2.5886	5.4129	5.3440
100	200	0.9	Cov	0.9840	0.9522	0.3760	0.9796	0.9196
			Len	939.1129	5.3774	1.3383	5.4572	5.2256
400	20	0.9	Cov	0.9708	0.9614	0.9632	0.9632	0.9632
			Len	10.2416	4.6872	4.3818	4.3818	4.3818
400	40	0.9	Cov	0.9668	0.9602	0.9554	0.9674	0.9552
			Len	14.2817	5.0883	4.1901	4.3907	4.2475
400	100	0.9	Cov	0.9660	0.9618	0.8990	0.9578	0.9362
			Len	22.9640	5.1276	3.7880	4.4828	4.1318
400	200	0.9	Cov	0.9650	0.9568	0.7234	0.9608	0.9264
			Len	31.8642	5.0423	3.0691	4.5267	4.0473
1000	20	0.9	Cov	0.9650	0.9600	0.9616	0.9616	0.9616
			Len	9.6803	4.4626	4.1730	4.1730	4.1730
1000	40	0.9	Cov	0.9612	0.9548	0.9546	0.9546	0.9546
			Len	13.5621	4.9165	4.0820	4.0820	4.0820
1000	100	0.9	Cov	0.9582	0.9550	0.9366	0.9506	0.9410
			Len	21.9229	4.9974	3.9317	4.1596	3.9579
1000	200	0.9	Cov	0.9626	0.9558	0.8948	0.9472	0.9236
			Len	30.2809	5.0038	3.6985	4.2454	3.8672

Table 5.85. Etype = 1, J=20, k=p-1, $\psi = 0$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	40	0	Cov	0.9804	0.9342	0.8636	0.9720	0.9466
			Len	28.7404	22.9431	4.4476	27.9954	25.1014
400	40	0	Cov	0.9718	0.9544	0.9688	0.9584	0.9476
			Len	25.6733	17.2843	4.5671	19.0186	18.0978
1000	40	0	Cov	0.9648	0.9648	0.9648	0.9648	0.9648
			Len	4.4943	4.4897	4.4897	4.4897	4.4897
100	100	0	Cov	0.9592	0.8914	0.4858	0.9586	0.9076
			Len	42.1415	34.1534	6.2730	42.6780	37.3070
400	100	0	Cov	0.9744	0.9390	0.9298	0.9674	0.9316
			Len	43.1610	34.3478	4.1657	39.0673	34.8319
1000	100	0	Cov	0.9914	0.9822	0.9762	0.9762	0.9762
			Len	141.6904	17.3494	4.8835	4.8835	4.8835
100	200	0	Cov	0.9580	0.9020	0.2258	0.9582	0.9058
			Len	60.3672	50.2021	5.9042	60.3441	51.8363
400	200	0	Cov	0.9484	0.8884	0.6972	0.9368	0.8738
			Len	53.9373	44.4654	2.9420	51.5629	44.8718
1000	200	0	Cov	0.9762	0.9456	0.9422	0.9678	0.9290
			Len	60.1349	46.8948	4.2862	52.5603	47.1483

Table 5.86. Etype = 1, J=20, k=p-1, $\psi = 1/\sqrt{p}$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	40	0.1581	Cov	0.9846	0.9392	0.8892	0.9856	0.9298
			Len	162.2781	39.4733	4.0674	5.2259	55.3481
100	100	0.1	Cov	0.9798	0.9152	0.6492	0.9796	0.9128
			Len	399.3837	98.7107	2.6146	5.6978	142.7038
100	200	0.07	Cov	0.9852	0.9206	0.3892	0.9816	0.8976
			Len	912.6472	257.4309	1.4661	6.5425	282.1866
400	40	0.1581	Cov	0.9792	0.9626	0.9668	0.9762	0.9348
			Len	130.5781	21.5725	4.5712	4.7171	20.8497
400	100	0.1	Cov	0.9778	0.9504	0.9288	0.9778	0.9142
			Len	354.8799	68.6769	4.1742	4.8146	62.8941
400	200	0.07	Cov	0.9766	0.9442	0.7756	0.9804	0.8826
			Len	709.1189	142.3295	3.4075	5.0190	129.3459
1000	40	0.1581	Cov	0.9734	0.9702	0.9702	0.9702	0.9702
			Len	6.1980	4.4889	4.4889	4.4889	4.4889
1000	100	0.1	Cov	0.9764	0.9652	0.9692	0.9776	0.9324
			Len	264.0684	37.3751	4.5489	4.7003	34.1218
1000	200	0.07	Cov	0.9796	0.9582	0.9440	0.9756	0.9088
			Len	584.6784	92.4509	4.2860	4.7714	79.6519

Table 5.87. Etype = 1, J=20, k=p-1, $\psi = 0.9$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	40	0.9	Cov	0.9860	0.9622	0.8800	0.9780	0.9284
			Len	696.5069	7.9673	4.0548	5.0565	8.0655
400	40	0.9	Cov	0.9802	0.9748	0.9672	0.9730	0.9636
			Len	32.9674	7.5491	4.5757	4.7003	4.9483
1000	40	0.9	Cov	0.9812	0.9676	0.9704	0.9704	0.9704
			Len	31.4679	7.4021	4.4863	4.4863	4.4863
100	100	0.9	Cov	0.9834	0.9604	0.6280	0.9810	0.9162
			Len	3033.0770	16.4428	2.5458	5.0460	17.5271
400	100	0.9	Cov	0.9830	0.9698	0.9164	0.9694	0.9190
			Len	136.2556	15.8455	4.1673	4.6925	8.0764
1000	100	0.9	Cov	0.9822	0.9776	0.9674	0.9786	0.9430
			Len	131.9932	16.1500	4.5487	4.6726	5.6318
100	200	0.9	Cov	0.9860	0.9552	0.3830	0.9804	0.8886
			Len	10602.9900	32.2699	1.2882	5.0439	33.3948
400	200	0.9	Cov	0.9834	0.9698	0.7620	0.9784	0.8976
			Len	479.7499	28.6809	3.4005	4.6915	14.6696
1000	200	0.9	Cov	0.9836	0.9758	0.9414	0.9782	0.9136
			Len	364.8946	29.9144	4.2867	4.6716	9.4535

Table 5.88. Etype = 1, J=50, k=1, $\psi = 0$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0	Cov	0.9652	0.9616	0.9332	0.9664	0.9670
			Len	4.5257	4.3837	4.3410	6.1232	4.4394
100	40	0	Cov	0.9618	0.9574	0.9124	0.9632	0.9624
			Len	4.5434	4.3558	4.1779	6.1877	4.4328
100	100	0	Cov	0.9672	0.9612	0.8404	0.9656	0.9706
			Len	4.5921	4.3451	3.7400	6.2295	4.4459
100	200	0	Cov	0.9646	0.9556	0.7570	0.9692	0.9656
			Len	4.6350	4.3430	3.2088	6.2590	4.4495
400	20	0	Cov	0.9532	0.9492	0.9448	0.9462	0.9462
			Len	3.9669	3.9718	3.9174	4.9557	3.9376
400	40	0	Cov	0.9500	0.9452	0.9282	0.9424	0.9420
			Len	3.9619	3.9460	3.8103	5.2597	3.8993
400	100	0	Cov	0.9440	0.9374	0.8650	0.9432	0.9294
			Len	3.9595	3.9117	3.4765	5.4498	3.8501
400	200	0	Cov	0.9504	0.9424	0.6928	0.9404	0.9296
			Len	3.9576	3.8855	2.8455	5.5121	3.8129
1000	20	0	Cov	0.9466	0.9464	0.9464	0.9464	0.9464
			Len	3.9043	3.9212	3.9041	3.9041	3.9041
1000	40	0	Cov	0.9444	0.9420	0.9388	0.9362	0.9366
			Len	3.8865	3.9032	3.8622	4.6786	3.8694
1000	100	0	Cov	0.9440	0.9418	0.9230	0.9454	0.9354
			Len	3.8781	3.8766	3.7407	5.1360	3.8190
1000	200	0	Cov	0.9448	0.9382	0.8840	0.9408	0.9268
			Len	3.8714	3.8474	3.5248	5.2935	3.7735

Table 5.89. Etype = 1, J=50, k=1, $\psi = 1/\sqrt{p}$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.2236	Cov	0.9646	0.9578	0.9650	0.9654	0.9654
			Len	4.7119	4.3822	5.4855	5.5580	4.4388
100	40	0.1581	Cov	0.9622	0.9570	0.9608	0.9612	0.9638
			Len	4.7381	4.3578	5.6994	5.7663	4.4311
100	100	0.1	Cov	0.9612	0.9524	0.9606	0.9614	0.9596
			Len	4.7805	4.3368	5.9016	5.9624	4.4376
100	200	0.07	Cov	0.9664	0.9546	0.9658	0.9666	0.9658
			Len	4.8425	4.3153	5.9951	6.0556	4.4356
400	20	0.2236	Cov	0.9466	0.9478	0.9400	0.9394	0.9400
			Len	3.9624	3.9892	3.9159	4.6016	3.9345
400	40	0.1581	Cov	0.9478	0.9494	0.9306	0.9482	0.9390
			Len	3.9622	3.9843	3.8125	4.9325	3.8998
400	100	0.1	Cov	0.9452	0.9466	0.8628	0.9484	0.9306
			Len	3.9633	3.9729	3.4786	5.2054	3.8548
400	200	0.07	Cov	0.9482	0.9480	0.6918	0.9492	0.9262
			Len	3.9693	3.9678	2.8595	5.3412	3.8186
1000	20	0.2236	Cov	0.9452	0.9490	0.9462	0.9462	0.9462
			Len	3.9022	3.9296	3.9021	3.9021	3.9021
1000	40	0.1581	Cov	0.9490	0.9518	0.9432	0.9424	0.9418
			Len	3.8878	3.9283	3.8622	4.4673	3.8695
1000	100	0.1	Cov	0.9414	0.9444	0.9200	0.9428	0.9322
			Len	3.8777	3.9250	3.7379	4.9233	3.8167
1000	200	0.07	Cov	0.9492	0.9528	0.8894	0.9434	0.9310
			Len	3.8741	3.9218	3.5239	5.1364	3.7738

Table 5.90. Etype = 1, J=50, k=1, $\psi = 0.9$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.9	Cov	0.9638	0.9628	0.9652	0.9652	0.9640
			Len	10.9498	4.3812	4.4506	4.4507	4.3859
100	40	0.9	Cov	0.9678	0.9554	0.9612	0.9612	0.9568
			Len	16.4822	4.3762	4.4567	4.4567	4.3819
100	100	0.9	Cov	0.9742	0.9552	0.9592	0.9592	0.9602
			Len	27.3490	4.3471	4.4616	4.4616	4.3695
100	200	0.9	Cov	0.9666	0.9512	0.9642	0.9642	0.9600
			Len	46.5845	4.3114	4.4650	4.4650	4.3609
400	20	0.9	Cov	0.9462	0.9446	0.9340	0.9444	0.9400
			Len	4.0125	3.9973	3.9182	3.9911	3.9380
400	40	0.9	Cov	0.9438	0.9434	0.9196	0.9428	0.9318
			Len	4.2330	3.9890	3.8141	3.9935	3.9005
400	100	0.9	Cov	0.9514	0.9450	0.8648	0.9456	0.9278
			Len	5.5124	3.9802	3.4781	3.9931	3.8461
400	200	0.9	Cov	0.9462	0.9414	0.6824	0.9428	0.9196
			Len	8.4912	3.9793	2.8470	3.9989	3.8091
1000	20	0.9	Cov	0.9516	0.9498	0.9466	0.9466	0.9466
			Len	3.9342	3.9302	3.8999	3.8999	3.8999
1000	40	0.9	Cov	0.9472	0.9466	0.9370	0.9460	0.9396
			Len	3.9365	3.9277	3.8591	3.9080	3.8658
1000	100	0.9	Cov	0.9504	0.9496	0.9234	0.9458	0.9354
			Len	3.9435	3.9272	3.7396	3.9167	3.8177
1000	200	0.9	Cov	0.9480	0.9488	0.8798	0.9462	0.9312
			Len	3.9492	3.9236	3.5241	3.9171	3.7724

Table 5.91. Etype = 1, J=50, k=19, $\psi = 0$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0	Cov	0.9570	0.9182	0.9300	0.9588	0.9502
			Len	18.0833	14.2769	7.4242	18.9945	18.3207
100	40	0	Cov	0.9550	0.9204	0.8914	0.9606	0.9494
			Len	18.0864	14.2151	8.5679	19.3867	18.3136
100	100	0	Cov	0.9578	0.9208	0.8302	0.9656	0.9494
			Len	18.0698	14.2752	9.1437	19.5983	18.2962
100	200	0	Cov	0.9622	0.9334	0.7432	0.9644	0.9542
			Len	19.1499	16.1620	8.5866	19.7274	18.3149
400	20	0	Cov	0.9560	0.9406	0.9546	0.9494	0.9386
			Len	16.8880	11.2745	4.1413	14.1885	13.7495
400	40	0	Cov	0.9536	0.9368	0.9424	0.9484	0.9352
			Len	16.8798	11.2835	4.0347	16.3877	13.7694
400	100	0	Cov	0.9578	0.9366	0.8878	0.9534	0.9362
			Len	16.8601	11.2398	3.6805	17.6605	13.7644
400	200	0	Cov	0.9626	0.9456	0.7152	0.9624	0.9448
			Len	16.8816	11.2793	3.0607	18.0954	13.7507
1000	20	0	Cov	0.9562	0.9562	0.9562	0.9562	0.9562
			Len	4.1766	4.1748	4.1748	4.1748	4.1748
1000	40	0	Cov	0.9608	0.9608	0.9590	0.9492	0.9612
			Len	4.3715	4.1689	4.1326	12.7165	4.1742
1000	100	0	Cov	0.9588	0.9566	0.9312	0.9520	0.9560
			Len	4.4814	4.1688	4.0025	16.0971	4.1773
1000	200	0	Cov	0.9602	0.9592	0.9124	0.9534	0.9612
			Len	4.5501	4.1662	3.7736	17.2043	4.1772

Table 5.92. Etype = 1, J=50, k=19, $\psi = 1/\sqrt{p}$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.2236	Cov	0.9562	0.9216	0.9612	0.9626	0.9380
			Len	69.9410	16.0978	4.4847	4.5077	46.7607
100	40	0.1581	Cov	0.9618	0.9138	0.9652	0.9660	0.9400
			Len	69.0296	17.3231	12.2787	12.5083	48.9391
100	100	0.1	Cov	0.9568	0.8828	0.9674	0.9680	0.9308
			Len	67.4039	18.1965	16.0752	16.2952	50.1546
100	200	0.07	Cov	0.9664	0.8910	0.9662	0.9672	0.9268
			Len	78.0264	25.2935	17.4825	17.6891	50.2308
400	20	0.2236	Cov	0.9608	0.9480	0.9512	0.9610	0.9282
			Len	65.7279	10.5271	4.1424	4.2154	16.5096
400	40	0.1581	Cov	0.9666	0.9518	0.9398	0.9546	0.9306
			Len	64.8389	11.3629	4.0269	10.5969	17.8209
400	100	0.1	Cov	0.9604	0.9452	0.8840	0.9528	0.9306
			Len	63.4733	12.2446	3.6796	14.6193	18.9651
400	200	0.07	Cov	0.9606	0.9284	0.7244	0.9550	0.9232
			Len	62.0785	12.8653	3.0995	16.2242	19.6209
1000	20	0.2236	Cov	0.9606	0.9640	0.9640	0.9640	0.9640
			Len	4.2233	4.1775	4.1775	4.1775	4.1775
1000	40	0.1581	Cov	0.9624	0.9638	0.9590	0.9562	0.9620
			Len	18.4591	4.1882	4.1336	8.4430	4.1777
1000	100	0.1	Cov	0.9592	0.9590	0.9406	0.9534	0.9606
			Len	31.8376	4.3490	4.0047	13.3385	4.1842
1000	200	0.07	Cov	0.9640	0.9670	0.9068	0.9560	0.9648
			Len	40.3358	4.6655	3.7700	15.3907	4.1840

Table 5.93. Etype = 1, J=50, k=19, $\psi = 0.9$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.9	Cov	0.9640	0.9504	0.9642	0.9642	0.9406
			Len	230.3125	5.0901	4.4468	4.4469	8.1380
100	40	0.9	Cov	0.9694	0.9326	0.9648	0.9648	0.9314
			Len	329.4575	5.0132	4.6427	4.6427	8.0488
100	100	0.9	Cov	0.9642	0.9250	0.9638	0.9638	0.9314
			Len	523.1495	4.8393	4.7692	4.7692	7.9676
100	200	0.9	Cov	0.9668	0.9242	0.9656	0.9656	0.9176
			Len	894.3372	4.7773	4.8036	4.8036	7.8539
400	20	0.9	Cov	0.9604	0.9542	0.9564	0.9618	0.9472
			Len	98.3940	4.5470	4.1391	4.2048	4.4899
400	40	0.9	Cov	0.9632	0.9548	0.9412	0.9620	0.9430
			Len	65.9523	4.8753	4.0289	4.3607	4.4909
400	100	0.9	Cov	0.9634	0.9476	0.8848	0.9558	0.9386
			Len	129.8894	4.9145	3.6826	4.4869	4.4795
400	200	0.9	Cov	0.9604	0.9466	0.7210	0.9574	0.9298
			Len	224.2285	4.8506	3.0147	4.5284	4.4653
1000	20	0.9	Cov	0.9620	0.9578	0.9590	0.9590	0.9590
			Len	9.6749	4.4566	4.1681	4.1681	4.1681
1000	40	0.9	Cov	0.9610	0.9584	0.9570	0.9618	0.9584
			Len	13.5545	4.9061	4.0839	4.2151	4.1170
1000	100	0.9	Cov	0.9632	0.9546	0.9350	0.9504	0.9490
			Len	21.9358	5.0150	3.9333	4.3319	4.0864
1000	200	0.9	Cov	0.9566	0.9470	0.8924	0.9550	0.9480
			Len	30.2731	4.9927	3.6980	4.3807	4.0663

Table 5.94. Etype = 1, J=50, k=p-1, $\psi = 0$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	40	0	Cov	0.9556	0.9060	0.8976	0.9622	0.9502
			Len	25.8853	21.2128	11.6716	27.3372	26.2609
400	40	0	Cov	0.9566	0.9276	0.9472	0.9508	0.9284
			Len	24.7543	19.5415	4.0305	23.0815	21.8629
1000	40	0	Cov	0.9612	0.9432	0.9568	0.9418	0.9374
			Len	23.7491	15.2274	4.1325	17.6457	17.2327
100	100	0	Cov	0.9574	0.8910	0.8224	0.9646	0.9498
			Len	41.2114	33.9555	19.7567	43.8151	41.9417
400	100	0	Cov	0.9600	0.9246	0.8824	0.9602	0.9368
			Len	40.0437	34.1317	3.6847	39.3218	36.8697
1000	100	0	Cov	0.9580	0.9366	0.9386	0.9520	0.9362
			Len	39.4544	32.0313	4.0031	35.7395	33.7181
100	200	0	Cov	0.9558	0.9172	0.7410	0.9614	0.9474
			Len	60.9147	53.2067	26.5292	62.0366	59.1702
400	200	0	Cov	0.9516	0.9086	0.6818	0.9536	0.9194
			Len	55.2096	47.9602	3.3959	55.2905	51.5772
1000	200	0	Cov	0.9594	0.9270	0.9086	0.9538	0.9336
			Len	56.6913	48.7435	3.7709	54.1541	50.6050

Table 5.95. Etype = 1, J=50, k=p-1, $\psi = 1/\sqrt{p}$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	40	0.1581	Cov	0.9566	0.9040	0.9692	0.9690	0.9364
			Len	140.0937	34.4102	4.5917	4.6233	99.0403
100	100	0.1	Cov	0.9588	0.8700	0.9634	0.9642	0.9272
			Len	344.3750	85.0367	5.0036	5.0470	253.7439
100	200	0.07	Cov	0.9612	0.8784	0.9600	0.9610	0.9224
			Len	798.0916	236.3951	5.7416	5.7983	506.6544
400	40	0.1581	Cov	0.9656	0.9404	0.9424	0.9614	0.9196
			Len	131.8545	24.5389	4.0276	4.2377	38.8563
400	100	0.1	Cov	0.9606	0.9200	0.8936	0.9582	0.9048
			Len	324.8278	65.2592	3.6777	4.3359	105.7099
400	200	0.07	Cov	0.9598	0.9104	0.7196	0.9558	0.8936
			Len	638.0791	130.4837	3.0166	4.5329	215.5089
1000	40	0.1581	Cov	0.9576	0.9548	0.9594	0.9614	0.9284
			Len	128.8195	18.1126	4.1318	4.1817	20.0686
1000	100	0.1	Cov	0.9554	0.9382	0.9404	0.9580	0.9080
			Len	320.4182	52.8284	3.9998	4.2183	63.1281
1000	200	0.07	Cov	0.9606	0.9410	0.9088	0.9616	0.9044
			Len	625.9141	107.6711	3.7775	4.2988	133.2647

Table 5.96. Etype = 1, J=50, k=p-1, $\psi = 0.9$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	40	0.9	Cov	0.9680	0.9338	0.9694	0.9694	0.9350
			Len	676.8153	7.2241	4.4306	4.4306	14.9842
400	40	0.9	Cov	0.9632	0.9454	0.9400	0.9576	0.9184
			Len	293.9916	6.6371	4.0309	4.2069	6.0584
1000	40	0.9	Cov	0.9628	0.9568	0.9558	0.9612	0.9424
			Len	29.0129	6.8282	4.1355	4.1778	4.5960
100	100	0.9	Cov	0.9672	0.9212	0.9620	0.9620	0.9236
			Len	2725.3180	14.5819	4.4368	4.4368	36.3098
400	100	0.9	Cov	0.9648	0.9428	0.8802	0.9596	0.8980
			Len	1847.9650	13.7507	3.6735	4.2034	12.8067
1000	100	0.9	Cov	0.9656	0.9572	0.9392	0.9596	0.9164
			Len	121.6069	14.2116	4.0010	4.1748	8.0172
100	200	0.9	Cov	0.9656	0.9296	0.9652	0.9652	0.9192
			Len	9359.3370	28.7351	4.4382	4.4382	71.5347
400	200	0.9	Cov	0.9686	0.9402	0.7196	0.9614	0.8950
			Len	6070.9600	25.8279	3.0096	4.1987	24.7068
1000	200	0.9	Cov	0.9680	0.9486	0.9076	0.9606	0.9056
			Len	429.7017	26.0982	3.7736	4.1765	15.0494

Table 5.97. Etype = 2, J=5, k=1, $\psi = 0$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0	Cov	0.9328	0.9460	0.9328	0.9328	0.9328
			Len	6.5367	6.8943	6.5367	6.5367	6.5367
100	40	0	Cov	0.9234	0.9272	0.8390	0.9294	0.8662
			Len	6.2763	6.6211	5.7301	6.9415	5.8941
100	100	0	Cov	0.9190	0.9042	0.1398	0.9310	0.7438
			Len	6.1082	6.1505	1.5813	7.2358	4.8563
100	200	0	Cov	0.9216	0.8872	0.0002	0.9326	0.6350
			Len	6.1467	5.9040	0.0041	7.3917	4.1432
400	20	0	Cov	0.9400	0.9474	0.9396	0.9396	0.9396
			Len	6.3123	6.3881	6.3119	6.3119	6.3119
400	40	0	Cov	0.9356	0.9460	0.9356	0.9356	0.9356
			Len	6.1444	6.3061	6.1443	6.1443	6.1443
400	100	0	Cov	0.9134	0.9276	0.8942	0.9128	0.8952
			Len	5.6648	6.0531	5.6223	5.9019	5.6266
400	200	0	Cov	0.9116	0.9070	0.7212	0.9112	0.7856
			Len	5.4361	5.7600	4.6689	6.1916	4.9721
1000	20	0	Cov	0.9464	0.9478	0.9466	0.9466	0.9466
			Len	6.2915	6.3200	6.2913	6.2913	6.2913
1000	40	0	Cov	0.9438	0.9454	0.9434	0.9434	0.9434
			Len	6.2215	6.2836	6.2209	6.2209	6.2209
1000	100	0	Cov	0.9326	0.9406	0.9316	0.9316	0.9316
			Len	6.0328	6.1968	6.0327	6.0327	6.0327
1000	200	0	Cov	0.9114	0.9344	0.9100	0.9100	0.9100
			Len	5.7002	6.0298	5.7006	5.7006	5.7006

Table 5.98. Etype = 2, J=5, k=1, $\psi = 1/\sqrt{p}$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.2236	Cov	0.9236	0.9454	0.9230	0.9230	0.9230
			Len	6.5479	7.0617	6.5470	6.5470	6.5470
100	40	0.1581	Cov	0.9286	0.9502	0.8484	0.9356	0.8702
			Len	6.2714	7.0629	5.7123	6.8191	5.8840
100	100	0.1	Cov	0.9222	0.9480	0.1482	0.9332	0.7226
			Len	6.0889	6.9642	1.6236	7.0970	4.8504
100	200	0.07	Cov	0.9252	0.9444	0.0006	0.9382	0.6352
			Len	6.1285	6.9227	0.0061	7.2463	4.1295
400	20	0.2236	Cov	0.9402	0.9424	0.9396	0.9396	0.9396
			Len	6.3043	6.4135	6.3040	6.3040	6.3040
400	40	0.1581	Cov	0.9344	0.9482	0.9342	0.9342	0.9342
			Len	6.1334	6.3800	6.1328	6.1328	6.1328
400	100	0.1	Cov	0.9040	0.9392	0.8858	0.9078	0.8866
			Len	5.6490	6.2932	5.6073	5.8673	5.6119
400	200	0.07	Cov	0.9006	0.9382	0.7138	0.9116	0.7846
			Len	5.4609	6.3427	4.6765	6.1535	4.9868
1000	20	0.2236	Cov	0.9486	0.9502	0.9476	0.9476	0.9476
			Len	6.2980	6.3428	6.2973	6.2973	6.2973
1000	40	0.1581	Cov	0.9400	0.9454	0.9402	0.9402	0.9402
			Len	6.2319	6.3328	6.2315	6.2315	6.2315
1000	100	0.1	Cov	0.9392	0.9454	0.9384	0.9384	0.9384
			Len	6.0356	6.2889	6.0356	6.0356	6.0356
1000	200	0.07	Cov	0.9048	0.9390	0.9040	0.9040	0.9040
			Len	5.6972	6.1994	5.6977	5.6977	5.6977

Table 5.99. Etype = 2, J=5, k=1, $\psi = 0.9$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.9	Cov	0.9516	0.9516	0.9240	0.9240	0.9240
			Len	7.2521	7.2363	6.5957	6.5957	6.5957
100	40	0.9	Cov	0.9550	0.9546	0.8350	0.9358	0.8650
			Len	7.2828	7.2730	5.7666	6.6348	5.9382
100	100	0.9	Cov	0.9518	0.9500	0.1390	0.9344	0.7350
			Len	7.3890	7.3171	1.6286	6.6899	4.8838
100	200	0.9	Cov	0.9584	0.9504	0.0008	0.9452	0.6362
			Len	7.4891	7.2657	0.0059	6.7301	4.1683
400	20	0.9	Cov	0.9454	0.9446	0.9356	0.9356	0.9356
			Len	6.4493	6.4470	6.3144	6.3144	6.3144
400	40	0.9	Cov	0.9456	0.9462	0.9324	0.9324	0.9324
			Len	6.4483	6.4388	6.1431	6.1431	6.1431
400	100	0.9	Cov	0.9512	0.9502	0.8902	0.9144	0.8882
			Len	6.4798	6.4385	5.6337	5.8129	5.6393
400	200	0.9	Cov	0.9460	0.9440	0.7116	0.9234	0.7988
			Len	6.4580	6.3991	4.6681	5.7969	4.9719
1000	20	0.9	Cov	0.9466	0.9464	0.9442	0.9442	0.9442
			Len	6.3450	6.3423	6.2909	6.2909	6.2909
1000	40	0.9	Cov	0.9434	0.9438	0.9388	0.9388	0.9388
			Len	6.3467	6.3373	6.2253	6.2253	6.2253
1000	100	0.9	Cov	0.9490	0.9488	0.9336	0.9336	0.9336
			Len	6.3606	6.3420	6.0293	6.0293	6.0293
1000	200	0.9	Cov	0.9430	0.9434	0.9016	0.9016	0.9016
			Len	6.3684	6.3392	5.6954	5.6954	5.6954

Table 5.100. Etype = 2, J=5, k=19, $\psi = 0$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0	Cov	0.9756	0.9760	0.9760	0.9760	0.9760
			Len	10.0489	10.0443	10.0478	10.0478	10.0478
100	40	0	Cov	0.9764	0.9666	0.9338	0.9664	0.9734
			Len	15.5734	10.3147	8.4003	16.9671	9.9483
100	100	0	Cov	0.9758	0.9548	0.1994	0.9760	0.9648
			Len	17.6359	11.6042	2.2778	21.0897	9.7592
100	200	0	Cov	0.9726	0.9384	0.0006	0.9752	0.9476
			Len	18.5905	12.6023	0.0092	22.2127	9.3987
400	20	0	Cov	0.9710	0.9712	0.9712	0.9712	0.9712
			Len	8.4270	8.4250	8.4250	8.4250	8.4250
400	40	0	Cov	0.9644	0.9676	0.9642	0.9642	0.9642
			Len	8.1467	8.2846	8.1396	8.1396	8.1396
400	100	0	Cov	0.9564	0.9650	0.9458	0.9234	0.9458
			Len	7.4308	7.8462	7.2560	9.4788	7.2640
400	200	0	Cov	0.9558	0.9548	0.8014	0.9318	0.8886
			Len	7.3987	7.4672	5.8517	13.7904	6.3852
1000	20	0	Cov	0.9586	0.9580	0.9580	0.9580	0.9580
			Len	6.9784	6.9778	6.9778	6.9778	6.9778
1000	40	0	Cov	0.9586	0.9580	0.9590	0.9590	0.9590
			Len	6.9270	6.9679	6.9250	6.9250	6.9250
1000	100	0	Cov	0.9534	0.9574	0.9528	0.9528	0.9528
			Len	6.6728	6.8378	6.6687	6.6687	6.6687
1000	200	0	Cov	0.9358	0.9512	0.9322	0.9322	0.9322
			Len	6.2695	6.6315	6.2658	6.2658	6.2658

Table 5.101. Etype = 2, J=5, k=19, $\psi = 1/\sqrt{p}$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.2236	Cov	0.9778	0.9782	0.9782	0.9782	0.9782
			Len	10.0614	10.0098	10.0214	10.0214	10.0214
100	40	0.1581	Cov	0.9902	0.9636	0.9360	0.9734	0.9684
			Len	45.7718	11.9217	8.4789	12.9840	10.0205
100	100	0.1	Cov	0.9914	0.9458	0.2186	0.9778	0.9704
			Len	58.0491	15.5082	2.3674	18.4662	9.9478
100	200	0.07	Cov	0.9910	0.9264	0.0022	0.9804	0.9666
			Len	64.5585	17.8003	0.0136	21.2596	10.0186
400	20	0.2236	Cov	0.9740	0.9754	0.9754	0.9754	0.9754
			Len	8.4459	8.4272	8.4272	8.4272	8.4272
400	40	0.1581	Cov	0.9708	0.9686	0.9686	0.9686	0.9686
			Len	8.3370	8.3125	8.1346	8.1346	8.1346
400	100	0.1	Cov	0.9704	0.9688	0.9482	0.9384	0.9512
			Len	8.1028	8.1161	7.2782	8.8427	7.2883
400	200	0.07	Cov	0.9602	0.9650	0.8074	0.9242	0.8836
			Len	7.7605	7.9571	5.8309	12.6896	6.3658
1000	20	0.2236	Cov	0.9600	0.9606	0.9606	0.9606	0.9606
			Len	7.0119	6.9913	6.9913	6.9913	6.9913
1000	40	0.1581	Cov	0.9578	0.9572	0.9570	0.9570	0.9570
			Len	7.0037	6.9799	6.9299	6.9299	6.9299
1000	100	0.1	Cov	0.9502	0.9512	0.9440	0.9440	0.9440
			Len	6.9322	6.9042	6.6668	6.6668	6.6668
1000	200	0.07	Cov	0.9586	0.9598	0.9318	0.9318	0.9318
			Len	6.8995	6.8728	6.2666	6.2666	6.2666

Table 5.102. Etype = 2, J=5, k=19, $\psi = 0.9$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.9	Cov	0.9696	0.9604	0.9538	0.9538	0.9538
			Len	11.9344	8.2110	7.8086	7.8086	7.8086
100	40	0.9	Cov	0.9794	0.9584	0.8778	0.9520	0.8984
			Len	16.4495	8.2539	6.5470	7.7055	6.7839
100	100	0.9	Cov	0.9770	0.9548	0.1562	0.9548	0.7750
			Len	25.5281	8.0087	1.7863	7.6468	5.4816
100	200	0.9	Cov	0.9776	0.9458	0.0014	0.9510	0.6720
			Len	37.1526	7.7236	0.0065	7.6230	4.6524
400	20	0.9	Cov	0.9564	0.9532	0.9560	0.9560	0.9560
			Len	9.7518	7.0254	6.8900	6.8900	6.8900
400	40	0.9	Cov	0.9648	0.9502	0.9448	0.9448	0.9448
			Len	13.8309	7.2221	6.6249	6.6249	6.6249
400	100	0.9	Cov	0.9588	0.9480	0.8972	0.9192	0.8946
			Len	21.5731	7.2243	6.0202	6.2304	6.0258
400	200	0.9	Cov	0.9556	0.9454	0.7424	0.9310	0.8134
			Len	31.2260	7.1155	4.9446	6.2583	5.2971
1000	20	0.9	Cov	0.9536	0.9554	0.9548	0.9548	0.9548
			Len	9.2896	6.8012	6.6668	6.6668	6.6668
1000	40	0.9	Cov	0.9560	0.9510	0.9504	0.9504	0.9504
			Len	13.2967	7.0374	6.5530	6.5530	6.5530
1000	100	0.9	Cov	0.9568	0.9552	0.9448	0.9448	0.9448
			Len	20.7992	7.0688	6.3001	6.3001	6.3001
1000	200	0.9	Cov	0.9554	0.9494	0.9190	0.9190	0.9190
			Len	30.1751	7.0392	5.9128	5.9128	5.9128

Table 5.103. Etype = 2, J=5, k=p-1, $\psi = 0$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	40	0	Cov	0.9784	0.9348	0.9350	0.9670	0.9048
			Len	27.5720	18.9041	8.3568	21.8901	18.1897
400	40	0	Cov	0.9728	0.9720	0.9720	0.9720	0.9720
			Len	8.7191	8.7163	8.7163	8.7163	8.7163
1000	40	0	Cov	0.9728	0.9732	0.9732	0.9732	0.9732
			Len	7.8926	7.8911	7.8911	7.8911	7.8911
100	100	0	Cov	0.9226	0.7958	0.1516	0.9152	0.6920
			Len	35.2389	24.8367	1.8982	33.1127	22.4919
400	100	0	Cov	0.9804	0.9494	0.9708	0.9448	0.9288
			Len	33.8776	19.3790	8.9249	18.8864	18.8101
1000	100	0	Cov	0.9738	0.9730	0.9730	0.9730	0.9730
			Len	8.7720	8.7675	8.7675	8.7675	8.7675
100	200	0	Cov	0.9190	0.7528	0.0008	0.9270	0.6068
			Len	49.9786	34.9318	0.0174	49.4161	29.1691
400	200	0	Cov	0.9748	0.9468	0.8880	0.9590	0.9188
			Len	35.3882	21.2707	7.1463	33.9008	19.2347
1000	200	0	Cov	0.9750	0.9748	0.9748	0.9748	0.9748
			Len	9.3472	9.3328	9.3328	9.3328	9.3328

Table 5.104. Etype = 2, J=5, k=p-1, $\psi = 1/\sqrt{p}$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	40	0.1581	Cov	0.9926	0.9558	0.9340	0.9784	0.9060
			Len	111.9761	24.4564	8.4277	10.0352	20.3508
100	100	0.1	Cov	0.9932	0.9284	0.2050	0.9776	0.8090
			Len	331.0534	71.8418	2.2720	10.1980	50.5520
100	200	0.07	Cov	0.9944	0.9070	0.0018	0.9796	0.7172
			Len	710.2673	150.8317	0.0087	10.7676	92.8100
400	40	0.1581	Cov	0.9738	0.9720	0.9720	0.9720	0.9720
			Len	8.8442	8.7201	8.7201	8.7201	8.7201
400	100	0.1	Cov	0.9890	0.9664	0.9668	0.9730	0.9202
			Len	119.0915	21.7437	8.9387	9.2993	18.8528
400	200	0.07	Cov	0.9900	0.9392	0.8828	0.9660	0.9062
			Len	161.3514	33.3974	7.1552	23.4365	21.6280
1000	40	0.1581	Cov	0.9694	0.9710	0.9710	0.9710	0.9710
			Len	7.9887	7.9020	7.9020	7.9020	7.9020
1000	100	0.1	Cov	0.9814	0.9722	0.9722	0.9722	0.9722
			Len	16.9202	8.7732	8.7732	8.7732	8.7732
1000	200	0.07	Cov	0.9878	0.9752	0.9752	0.9752	0.9752
			Len	37.0816	9.3373	9.3374	9.3374	9.3374

Table 5.105. Etype = 2, J=5, k=p-1, $\psi = 0.9$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	40	0.9	Cov	0.9876	0.9690	0.9046	0.9662	0.9256
			Len	36.6262	10.2450	7.2120	8.5195	7.5336
400	40	0.9	Cov	0.9726	0.9642	0.9570	0.9570	0.9570
			Len	30.5834	9.2919	7.4547	7.4547	7.4547
1000	40	0.9	Cov	0.9634	0.9558	0.9568	0.9568	0.9568
			Len	28.2150	8.7865	7.0300	7.0300	7.0300
100	100	0.9	Cov	0.9966	0.9724	0.1930	0.9712	0.8482
			Len	174.1334	19.2041	2.1794	9.5491	8.2058
400	100	0.9	Cov	0.9872	0.9742	0.9456	0.9600	0.9468
			Len	138.9168	17.8661	7.5909	7.8954	7.6080
1000	100	0.9	Cov	0.9830	0.9778	0.9714	0.9714	0.9714
			Len	132.2012	17.4709	8.1764	8.1764	8.1764
100	200	0.9	Cov	0.9942	0.9732	0.0016	0.9748	0.7434
			Len	862.6756	32.4857	0.0082	9.9661	11.5052
400	200	0.9	Cov	0.9846	0.9730	0.8230	0.9632	0.8946
			Len	188.5539	17.0783	6.0237	8.0185	6.7051
1000	200	0.9	Cov	0.9878	0.9812	0.9640	0.9640	0.9640
			Len	389.9394	32.5495	8.1215	8.1215	8.1215

Table 5.106. Etype = 2, J=10, k=1, $\psi = 0$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0	Cov	0.9496	0.9512	0.9324	0.9494	0.9408
			Len	6.8577	6.9764	6.5832	7.4340	6.6735
100	40	0	Cov	0.9464	0.9376	0.8448	0.9476	0.9046
			Len	6.8045	6.7801	5.6991	7.6956	6.3092
100	100	0	Cov	0.9434	0.9246	0.2848	0.9502	0.8702
			Len	6.7510	6.4992	2.3134	7.8592	5.8149
100	200	0	Cov	0.9492	0.9264	0.0380	0.9530	0.8488
			Len	6.8321	6.3655	0.2108	7.9407	5.5077
400	20	0	Cov	0.9456	0.9488	0.9454	0.9454	0.9454
			Len	6.3100	6.3866	6.3094	6.3094	6.3094
400	40	0	Cov	0.9368	0.9446	0.9360	0.9360	0.9360
			Len	6.1427	6.3078	6.1425	6.1425	6.1425
400	100	0	Cov	0.9350	0.9328	0.8932	0.9380	0.9076
			Len	5.9791	6.1111	5.6320	6.6058	5.7563
400	200	0	Cov	0.9330	0.9188	0.7186	0.9370	0.8666
			Len	5.9183	5.9292	4.6729	6.8079	5.4049
1000	20	0	Cov	0.9496	0.9488	0.9496	0.9496	0.9496
			Len	6.2951	6.3222	6.2947	6.2947	6.2947
1000	40	0	Cov	0.9428	0.9438	0.9420	0.9420	0.9420
			Len	6.2295	6.2910	6.2291	6.2291	6.2291
1000	100	0	Cov	0.9244	0.9342	0.9254	0.9254	0.9254
			Len	6.0306	6.1965	6.0305	6.0305	6.0305
1000	200	0	Cov	0.9326	0.9374	0.9052	0.9322	0.9092
			Len	5.8876	6.0601	5.6966	6.3854	5.7485

Table 5.107. Etype = 2, J=10, k=1, $\psi = 1/\sqrt{p}$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.2236	Cov	0.9424	0.9514	0.9258	0.9438	0.9284
			Len	6.7954	7.1022	6.5075	7.1879	6.5930
100	40	0.1581	Cov	0.9440	0.9502	0.8366	0.9474	0.9092
			Len	6.7382	7.0274	5.6437	7.4226	6.2427
100	100	0.1	Cov	0.9456	0.9464	0.3058	0.9518	0.8752
			Len	6.7895	7.0056	2.4519	7.7155	5.8596
100	200	0.07	Cov	0.9442	0.9450	0.0562	0.9500	0.8426
			Len	6.8382	6.9267	0.3036	7.8072	5.5210
400	20	0.2236	Cov	0.9518	0.9554	0.9514	0.9514	0.9514
			Len	6.3055	6.4200	6.3050	6.3050	6.3050
400	40	0.1581	Cov	0.9320	0.9438	0.9316	0.9316	0.9316
			Len	6.1380	6.3801	6.1372	6.1372	6.1372
400	100	0.1	Cov	0.9302	0.9436	0.8876	0.9308	0.9022
			Len	5.9633	6.3741	5.6062	6.5035	5.7293
400	200	0.07	Cov	0.9326	0.9462	0.7012	0.9374	0.8668
			Len	5.9082	6.3635	4.6723	6.7190	5.4057
1000	20	0.2236	Cov	0.9478	0.9512	0.9474	0.9474	0.9474
			Len	6.2971	6.3411	6.2969	6.2969	6.2969
1000	40	0.1581	Cov	0.9474	0.9498	0.9474	0.9474	0.9474
			Len	6.2383	6.3370	6.2378	6.2378	6.2378
1000	100	0.1	Cov	0.9364	0.9510	0.9356	0.9356	0.9356
			Len	6.0359	6.2949	6.0356	6.0356	6.0356
1000	200	0.07	Cov	0.9300	0.9434	0.9042	0.9326	0.9108
			Len	5.8937	6.3021	5.7016	6.3446	5.7518

Table 5.108. Etype = 2, J=10, k=1, $\psi = 0.9$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.9	Cov	0.9552	0.9548	0.9232	0.9464	0.9272
			Len	7.2407	7.2367	6.5651	6.9814	6.6473
100	40	0.9	Cov	0.9610	0.9612	0.8456	0.9524	0.9126
			Len	7.2507	7.2387	5.7184	7.0028	6.2944
100	100	0.9	Cov	0.9538	0.9528	0.3068	0.9506	0.8730
			Len	7.4077	7.2842	2.4612	7.1039	5.8732
100	200	0.9	Cov	0.9538	0.9472	0.0494	0.9492	0.8402
			Len	8.9931	7.2323	0.2941	7.1416	5.5394
400	20	0.9	Cov	0.9478	0.9466	0.9412	0.9412	0.9412
			Len	6.4460	6.4431	6.3097	6.3097	6.3097
400	40	0.9	Cov	0.9486	0.9476	0.9348	0.9348	0.9348
			Len	6.4554	6.4469	6.1487	6.1487	6.1487
400	100	0.9	Cov	0.9518	0.9498	0.8942	0.9408	0.9068
			Len	6.4600	6.4211	5.6218	6.1423	5.7481
400	200	0.9	Cov	0.9476	0.9448	0.7146	0.9422	0.8622
			Len	6.4873	6.4239	4.6836	6.1604	5.4101
1000	20	0.9	Cov	0.9506	0.9492	0.9468	0.9468	0.9468
			Len	6.3473	6.3445	6.2936	6.2936	6.2936
1000	40	0.9	Cov	0.9538	0.9542	0.9476	0.9476	0.9476
			Len	6.3485	6.3398	6.2245	6.2245	6.2245
1000	100	0.9	Cov	0.9454	0.9468	0.9306	0.9306	0.9306
			Len	6.3630	6.3430	6.0297	6.0297	6.0297
1000	200	0.9	Cov	0.9492	0.9494	0.9044	0.9356	0.9066
			Len	6.3651	6.3363	5.6952	6.0319	5.7450

Table 5.109. Etype = 2, J=10, k=19, $\psi = 0$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0	Cov	0.9808	0.9576	0.9644	0.9746	0.9504
			Len	20.6985	14.7362	8.7340	16.8180	15.1901
100	40	0	Cov	0.9800	0.9544	0.9090	0.9730	0.9440
			Len	20.6776	14.7442	7.3104	20.0622	15.1411
100	100	0	Cov	0.9768	0.9478	0.3532	0.9768	0.9268
			Len	20.1815	14.6303	3.0335	21.4056	14.5779
100	200	0	Cov	0.9676	0.9266	0.0426	0.9710	0.8904
			Len	19.5333	14.3629	0.3865	20.9442	13.7128
400	20	0	Cov	0.9728	0.9720	0.9720	0.9720	0.9720
			Len	8.4326	8.4313	8.4313	8.4313	8.4313
400	40	0	Cov	0.9716	0.9724	0.9724	0.9724	0.9724
			Len	8.1520	8.2946	8.1447	8.1447	8.1447
400	100	0	Cov	0.9646	0.9680	0.9424	0.9508	0.9562
			Len	8.2135	8.0251	7.2778	15.3863	7.6129
400	200	0	Cov	0.9678	0.9592	0.8044	0.9620	0.9388
			Len	8.3468	7.8437	5.8222	17.7929	7.2413
1000	20	0	Cov	0.9554	0.9550	0.9550	0.9550	0.9550
			Len	6.9925	6.9917	6.9917	6.9917	6.9917
1000	40	0	Cov	0.9600	0.9596	0.9600	0.9600	0.9600
			Len	6.9412	6.9795	6.9382	6.9382	6.9382
1000	100	0	Cov	0.9500	0.9550	0.9494	0.9494	0.9494
			Len	6.6847	6.8454	6.6806	6.6806	6.6806
1000	200	0	Cov	0.9436	0.9446	0.9228	0.9116	0.9266
			Len	6.5822	6.6774	6.2757	12.2616	6.3498

Table 5.110. Etype = 2, J=10, k=19, $\psi = 1/\sqrt{p}$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.2236	Cov	0.9870	0.9640	0.9608	0.9704	0.9404
			Len	73.8682	16.2784	8.6945	9.3741	15.8663
100	40	0.1581	Cov	0.9894	0.9600	0.9176	0.9810	0.9342
			Len	76.8364	18.7473	7.3840	14.3215	17.2066
100	100	0.1	Cov	0.9882	0.9450	0.4014	0.9782	0.9040
			Len	78.9188	21.0942	3.3246	19.0053	18.4751
100	200	0.07	Cov	0.9862	0.9362	0.0668	0.9788	0.8738
			Len	83.0190	23.2825	0.5835	21.0602	18.9800
400	20	0.2236	Cov	0.9710	0.9712	0.9712	0.9712	0.9712
			Len	8.4553	8.4316	8.4322	8.4322	8.4322
400	40	0.1581	Cov	0.9740	0.9730	0.9714	0.9714	0.9714
			Len	8.3755	8.3505	8.1642	8.1642	8.1642
400	100	0.1	Cov	0.9634	0.9630	0.9418	0.9554	0.9528
			Len	8.4131	8.1382	7.2849	13.2883	7.6229
400	200	0.07	Cov	0.9692	0.9648	0.8086	0.9644	0.9412
			Len	11.4040	8.0171	5.8294	16.1963	7.2706
1000	20	0.2236	Cov	0.9582	0.9588	0.9588	0.9588	0.9588
			Len	7.0052	6.9827	6.9827	6.9827	6.9827
1000	40	0.1581	Cov	0.9594	0.9600	0.9574	0.9574	0.9574
			Len	6.9943	6.9712	6.9204	6.9204	6.9204
1000	100	0.1	Cov	0.9514	0.9518	0.9442	0.9442	0.9442
			Len	6.9424	6.9166	6.6784	6.6784	6.6784
1000	200	0.07	Cov	0.9548	0.9572	0.9302	0.9242	0.9356
			Len	6.8895	6.8657	6.2631	11.3002	6.3427

Table 5.111. Etype = 2, J=10, k=19, $\psi = 0.9$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.9	Cov	0.9772	0.9618	0.9484	0.9638	0.9520
			Len	35.6038	8.2307	7.8132	8.4075	7.9651
100	40	0.9	Cov	0.9826	0.9572	0.8820	0.9650	0.9356
			Len	35.1546	8.2650	6.5688	8.3254	7.4254
100	100	0.9	Cov	0.9768	0.9484	0.3420	0.9586	0.9016
			Len	103.0599	7.9733	2.6554	8.2223	6.7265
100	200	0.9	Cov	0.9796	0.9460	0.0588	0.9606	0.8532
			Len	281.6071	7.6404	0.3178	8.1760	6.2701
400	20	0.9	Cov	0.9552	0.9494	0.9506	0.9506	0.9506
			Len	9.7501	7.0309	6.8865	6.8865	6.8865
400	40	0.9	Cov	0.9604	0.9510	0.9464	0.9464	0.9464
			Len	13.8206	7.2269	6.6317	6.6317	6.6317
400	100	0.9	Cov	0.9636	0.9590	0.9120	0.9532	0.9238
			Len	21.5691	7.2096	6.0136	6.6713	6.1771
400	200	0.9	Cov	0.9638	0.9488	0.7336	0.9484	0.8840
			Len	31.2092	7.1215	4.9418	6.6870	5.8102
1000	20	0.9	Cov	0.9556	0.9528	0.9526	0.9526	0.9526
			Len	9.2856	6.8027	6.6672	6.6672	6.6672
1000	40	0.9	Cov	0.9540	0.9522	0.9498	0.9498	0.9498
			Len	13.3109	7.0267	6.5357	6.5357	6.5357
1000	100	0.9	Cov	0.9540	0.9530	0.9416	0.9416	0.9416
			Len	20.7995	7.0668	6.2931	6.2931	6.2931
1000	200	0.9	Cov	0.9556	0.9470	0.9114	0.9398	0.9142
			Len	30.1532	7.0387	5.9209	6.3430	5.9846

Table 5.112. Etype = 2, J=10, k=p-1, $\psi = 0$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	40	0	Cov	0.9762	0.9270	0.9004	0.9694	0.9134
			Len	29.2411	22.0838	7.0977	26.4435	22.3143
400	40	0	Cov	0.9762	0.9762	0.9762	0.9762	0.9762
			Len	8.7423	8.7409	8.7409	8.7409	8.7409
1000	40	0	Cov	0.9690	0.9686	0.9686	0.9686	0.9686
			Len	7.8990	7.8983	7.8983	7.8983	7.8983
100	100	0	Cov	0.9466	0.8656	0.2946	0.9458	0.8304
			Len	40.8300	31.3864	3.3631	39.7969	31.3018
400	100	0	Cov	0.9774	0.9432	0.9522	0.9628	0.9164
			Len	41.5598	29.8979	7.8157	33.4445	29.2930
1000	100	0	Cov	0.9738	0.9742	0.9742	0.9742	0.9742
			Len	8.8012	8.7963	8.7963	8.7963	8.7963
100	200	0	Cov	0.9468	0.8428	0.0394	0.9510	0.7970
			Len	57.1290	44.0315	0.8811	56.7772	42.3968
400	200	0	Cov	0.9318	0.8438	0.7212	0.9152	0.8068
			Len	49.6837	37.9770	4.8771	45.1776	36.7644
1000	200	0	Cov	0.9772	0.9470	0.9694	0.9608	0.9244
			Len	56.3705	38.5022	8.1634	41.6062	37.5568

Table 5.113. Etype = 2, J=10, k=p-1, $\psi = 1/\sqrt{p}$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	40	0.1581	Cov	0.9866	0.9508	0.9134	0.9766	0.9108
			Len	160.3446	36.9186	7.3979	9.4746	33.9655
100	100	0.1	Cov	0.9878	0.9276	0.3756	0.9714	0.8632
			Len	412.2464	97.2709	3.0133	9.6752	85.8916
100	200	0.07	Cov	0.9886	0.9170	0.0678	0.9742	0.8288
			Len	867.9363	209.8252	0.3719	10.1468	166.2737
400	40	0.1581	Cov	0.9730	0.9722	0.9722	0.9722	0.9722
			Len	8.8387	8.7227	8.7242	8.7242	8.7242
400	100	0.1	Cov	0.9802	0.9552	0.9604	0.9784	0.9030
			Len	258.3750	46.0803	7.7999	8.7642	38.3404
400	200	0.07	Cov	0.9842	0.9356	0.8332	0.9734	0.8508
			Len	568.8111	105.0332	6.2417	8.8534	80.9983
1000	40	0.1581	Cov	0.9662	0.9654	0.9654	0.9654	0.9654
			Len	7.9912	7.9065	7.9065	7.9065	7.9065
1000	100	0.1	Cov	0.9802	0.9732	0.9732	0.9732	0.9732
			Len	16.8888	8.7906	8.7906	8.7906	8.7906
1000	200	0.07	Cov	0.9854	0.9586	0.9656	0.9800	0.9050
			Len	362.4080	56.6132	8.1670	8.8258	46.6793

Table 5.114. Etype = 2, J=10, k=p-1, ψ = 0.9

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	40	0.9	Cov	0.9894	0.9648	0.9068	0.9704	0.9430
			Len	163.5508	10.1662	7.1915	9.1634	8.3984
400	40	0.9	Cov	0.9772	0.9602	0.9578	0.9578	0.9578
			Len	30.5761	9.2889	7.4415	7.4415	7.4415
1000	40	0.9	Cov	0.9626	0.9594	0.9592	0.9592	0.9592
			Len	28.2281	8.7765	7.0298	7.0298	7.0298
100	100	0.9	Cov	0.9908	0.9616	0.3672	0.9720	0.8766
			Len	1622.7910	16.8749	2.9870	9.4344	11.7703
400	100	0.9	Cov	0.9868	0.9758	0.9488	0.9718	0.9434
			Len	138.6274	17.8940	7.6177	8.5205	8.1880
1000	100	0.9	Cov	0.9800	0.9778	0.9678	0.9678	0.9678
			Len	132.2754	17.5113	8.1753	8.1753	8.1753
100	200	0.9	Cov	0.9898	0.9612	0.0656	0.9746	0.8248
			Len	7481.8090	29.1677	0.3581	9.4423	19.6532
400	200	0.9	Cov	0.9854	0.9762	0.8376	0.9742	0.8978
			Len	392.6941	31.9719	6.2487	8.7302	10.8023
1000	200	0.9	Cov	0.9854	0.9814	0.9638	0.9736	0.9524
			Len	387.8449	32.6106	8.1019	8.7189	8.7801

Table 5.115. Etype = 2, J=20, k=1, $\psi = 0$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0	Cov	0.9538	0.9490	0.9270	0.9530	0.9444
			Len	7.1212	7.0271	6.5550	7.9473	6.8862
100	40	0	Cov	0.9534	0.9470	0.8558	0.9544	0.9370
			Len	7.1407	6.9454	5.7675	8.1222	6.7515
100	100	0	Cov	0.9536	0.9424	0.5274	0.9586	0.9282
			Len	7.1023	6.7633	3.3538	8.1766	6.5226
400	20	0	Cov	0.9388	0.9394	0.9382	0.9382	0.9382
			Len	6.3172	6.3934	6.3170	6.3170	6.3170
400	40	0	Cov	0.9438	0.9444	0.9356	0.9412	0.9360
			Len	6.2496	6.3191	6.1466	6.7352	6.1777
400	100	0	Cov	0.9354	0.9326	0.8892	0.9380	0.9170
			Len	6.2103	6.1923	5.6205	7.0338	5.9519
400	200	0	Cov	0.9440	0.9352	0.7118	0.9444	0.9110
			Len	6.1918	6.0927	4.6736	7.1619	5.7816
1000	20	0	Cov	0.9424	0.9460	0.9422	0.9422	0.9422
			Len	6.2999	6.3281	6.2999	6.2999	6.2999
1000	40	0	Cov	0.9404	0.9454	0.9408	0.9408	0.9408
			Len	6.2388	6.3041	6.2387	6.2387	6.2387
1000	100	0	Cov	0.9434	0.9438	0.9354	0.9390	0.9366
			Len	6.1358	6.2153	6.0350	6.5979	6.0603
1000	200	0	Cov	0.9322	0.9306	0.8944	0.9366	0.9146
			Len	6.0959	6.1170	5.6973	6.8368	5.8879

Table 5.116. Etype = 2, J=20, k=1, $\psi = 1/\sqrt{p}$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.2236	Cov	0.9524	0.9538	0.9262	0.9528	0.9420
			Len	7.1041	7.1029	6.5198	7.6275	6.8445
100	40	0.1581	Cov	0.9474	0.9484	0.8590	0.9562	0.9354
			Len	7.1582	7.0864	5.7693	7.8327	6.7390
100	100	0.1	Cov	0.9502	0.9446	0.6128	0.9522	0.9264
			Len	7.1914	6.9734	3.7396	7.9920	6.5412
100	200	0.07	Cov	0.9476	0.9406	0.3728	0.9538	0.9188
			Len	7.2525	6.9099	1.9756	8.0722	6.4255
400	20	0.2236	Cov	0.9376	0.9422	0.9374	0.9374	0.9374
			Len	6.3036	6.4150	6.3033	6.3033	6.3033
400	40	0.1581	Cov	0.9384	0.9442	0.9314	0.9438	0.9332
			Len	6.2589	6.4266	6.1583	6.6231	6.1888
400	100	0.1	Cov	0.9400	0.9466	0.8882	0.9414	0.9206
			Len	6.2038	6.3949	5.6196	6.8871	5.9467
400	200	0.07	Cov	0.9392	0.9448	0.7072	0.9384	0.9044
			Len	6.1853	6.3782	4.6525	7.0258	5.7709
1000	20	0.2236	Cov	0.9562	0.9568	0.9564	0.9564	0.9564
			Len	6.2957	6.3409	6.2954	6.2954	6.2954
1000	40	0.1581	Cov	0.9432	0.9454	0.9434	0.9434	0.9434
			Len	6.2376	6.3377	6.2371	6.2371	6.2371
1000	100	0.1	Cov	0.9390	0.9466	0.9324	0.9390	0.9346
			Len	6.1258	6.3190	6.0231	6.5141	6.0481
1000	200	0.07	Cov	0.9426	0.9452	0.9102	0.9372	0.9264
			Len	6.1055	6.3305	5.7035	6.7594	5.8991

Table 5.117. Etype = 2, J=20, k=1, $\psi = 0.9$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.9	Cov	0.9576	0.9568	0.9296	0.9570	0.9454
			Len	7.3167	7.2374	6.5763	7.1968	6.8642
100	40	0.9	Cov	0.9564	0.9540	0.8698	0.9550	0.9348
			Len	7.9689	7.2302	5.7784	7.1967	6.6949
100	100	0.9	Cov	0.9670	0.9594	0.6080	0.9576	0.9308
			Len	15.1272	7.2773	3.7338	7.2919	6.5663
100	200	0.9	Cov	0.9666	0.9574	0.3778	0.9598	0.9220
			Len	34.3723	7.2533	1.9070	7.3680	6.4522
400	20	0.9	Cov	0.9452	0.9448	0.9386	0.9386	0.9386
			Len	6.4316	6.4285	6.2919	6.2919	6.2919
400	40	0.9	Cov	0.9424	0.9428	0.9266	0.9380	0.9288
			Len	6.4440	6.4339	6.1377	6.3136	6.1681
400	100	0.9	Cov	0.9492	0.9492	0.8846	0.9428	0.9204
			Len	6.4678	6.4281	5.6477	6.3274	5.9626
400	200	0.9	Cov	0.9508	0.9474	0.7174	0.9474	0.9124
			Len	6.4716	6.4130	4.6796	6.3180	5.7763
1000	20	0.9	Cov	0.9456	0.9452	0.9448	0.9448	0.9448
			Len	6.3514	6.3485	6.2975	6.2975	6.2975
1000	40	0.9	Cov	0.9460	0.9454	0.9408	0.9408	0.9408
			Len	6.3586	6.3501	6.2317	6.2317	6.2317
1000	100	0.9	Cov	0.9524	0.9520	0.9372	0.9460	0.9412
			Len	6.3536	6.3320	6.0176	6.1901	6.0443
1000	200	0.9	Cov	0.9444	0.9420	0.9042	0.9396	0.9208
			Len	6.3632	6.3354	5.6974	6.2020	5.8894

Table 5.118. Etype = 2, J=20, k=19, $\psi = 0$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0	Cov	0.9790	0.9526	0.9528	0.9750	0.9542
			Len	21.5374	16.8205	8.1244	20.0649	18.4171
100	40	0	Cov	0.9768	0.9528	0.9048	0.9726	0.9526
			Len	21.4205	16.7150	6.9849	21.4213	18.2926
100	100	0	Cov	0.9690	0.9376	0.5542	0.9696	0.9428
			Len	20.7046	16.1859	4.7312	21.6300	17.6379
100	200	0	Cov	0.9686	0.9332	0.2496	0.9680	0.9308
			Len	20.6402	16.5447	2.4642	21.3088	17.0586
400	20	0	Cov	0.9728	0.9732	0.9732	0.9732	0.9732
			Len	8.4320	8.4307	8.4308	8.4308	8.4308
400	40	0	Cov	0.9728	0.9710	0.9704	0.9652	0.9720
			Len	9.3604	8.3855	8.1220	15.1714	8.4240
400	100	0	Cov	0.9692	0.9666	0.9414	0.9644	0.9664
			Len	10.0930	8.4027	7.2819	18.7989	8.4531
400	200	0	Cov	0.9746	0.9726	0.8154	0.9736	0.9722
			Len	10.6519	8.3787	5.8068	20.0465	8.4291
1000	20	0	Cov	0.9582	0.9584	0.9584	0.9584	0.9584
			Len	6.9982	6.9973	6.9973	6.9973	6.9973
1000	40	0	Cov	0.9574	0.9600	0.9566	0.9566	0.9566
			Len	6.9186	6.9567	6.9166	6.9166	6.9166
1000	100	0	Cov	0.9540	0.9534	0.9462	0.9418	0.9486
			Len	6.8880	6.8822	6.7000	13.1252	6.7487
1000	200	0	Cov	0.9528	0.9518	0.9292	0.9470	0.9442
			Len	6.9051	6.7842	6.2755	15.7877	6.5771

Table 5.119. Etype = 2, J=20, k=19, $\psi = 1/\sqrt{p}$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.2236	Cov	0.9828	0.9512	0.9502	0.9688	0.9400
			Len	81.1712	19.5505	8.1745	9.1209	26.1005
100	40	0.1581	Cov	0.9834	0.9492	0.9076	0.9774	0.9410
			Len	80.0670	20.9045	7.1599	15.0091	27.9565
100	100	0.1	Cov	0.9798	0.9272	0.6780	0.9778	0.9232
			Len	78.5992	21.6632	5.4714	19.1129	29.3061
100	200	0.07	Cov	0.9830	0.9244	0.3960	0.9828	0.9066
			Len	88.9480	27.8414	3.6561	20.8356	29.7058
400	20	0.2236	Cov	0.9764	0.9762	0.9762	0.9762	0.9762
			Len	8.4385	8.4169	8.4169	8.4169	8.4169
400	40	0.1581	Cov	0.9788	0.9716	0.9654	0.9674	0.9722
			Len	43.9822	8.7689	8.1415	11.2924	8.4295
400	100	0.1	Cov	0.9788	0.9684	0.9416	0.9698	0.9708
			Len	55.7322	10.4395	7.2701	16.0327	8.4244
400	200	0.07	Cov	0.9808	0.9680	0.8006	0.9696	0.9700
			Len	60.3479	12.3289	5.8287	18.2031	8.4406
1000	20	0.2236	Cov	0.9570	0.9564	0.9564	0.9564	0.9564
			Len	7.0065	6.9848	6.9848	6.9848	6.9848
1000	40	0.1581	Cov	0.9598	0.9616	0.9594	0.9594	0.9594
			Len	6.9917	6.9700	6.9193	6.9193	6.9193
1000	100	0.1	Cov	0.9534	0.9534	0.9472	0.9392	0.9466
			Len	6.9444	6.9216	6.6832	11.3450	6.7317
1000	200	0.07	Cov	0.9576	0.9552	0.9268	0.9444	0.9452
			Len	6.9703	6.8642	6.2661	14.3565	6.5712

Table 5.120. Etype = 2, J=20, k=19, $\psi = 0.9$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.9	Cov	0.9822	0.9604	0.9528	0.9690	0.9570
			Len	220.4046	8.4646	7.7830	8.6460	8.3207
100	40	0.9	Cov	0.9828	0.9572	0.8946	0.9670	0.9472
			Len	283.7220	8.3159	6.6182	8.5811	8.0704
100	100	0.9	Cov	0.9824	0.9560	0.6554	0.9672	0.9442
			Len	489.9401	7.9707	4.0782	8.4906	7.6958
100	200	0.9	Cov	0.9762	0.9468	0.4096	0.9672	0.9310
			Len	878.6499	7.7549	2.0579	8.4357	7.4702
400	20	0.9	Cov	0.9622	0.9498	0.9524	0.9524	0.9524
			Len	9.7305	7.0275	6.8905	6.8905	6.8905
400	40	0.9	Cov	0.9610	0.9520	0.9454	0.9518	0.9474
			Len	13.8407	7.2236	6.6331	6.8716	6.6873
400	100	0.9	Cov	0.9644	0.9534	0.9096	0.9578	0.9356
			Len	21.5739	7.2194	6.0202	6.9109	6.4614
400	200	0.9	Cov	0.9610	0.9512	0.7324	0.9524	0.9246
			Len	31.2258	7.1287	4.9339	6.9259	6.2788
1000	20	0.9	Cov	0.9562	0.9550	0.9528	0.9528	0.9528
			Len	9.2746	6.7931	6.6608	6.6608	6.6608
1000	40	0.9	Cov	0.9596	0.9504	0.9488	0.9488	0.9488
			Len	13.3123	7.0373	6.5459	6.5459	6.5459
1000	100	0.9	Cov	0.9522	0.9520	0.9410	0.9472	0.9424
			Len	20.8156	7.0636	6.2972	6.5392	6.3357
1000	200	0.9	Cov	0.9536	0.9440	0.9070	0.9408	0.9234
			Len	30.1717	7.0332	5.9177	6.5729	6.1663

Table 5.121. Etype = 2, J=20, k=p-1, $\psi = 0$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	40	0	Cov	0.9736	0.9338	0.8938	0.9706	0.9446
			Len	29.2430	23.5993	6.8840	28.5153	25.6398
400	40	0	Cov	0.9748	0.9486	0.9656	0.9574	0.9378
			Len	26.3682	18.2862	8.1510	20.1316	19.0416
1000	40	0	Cov	0.9718	0.9712	0.9712	0.9712	0.9712
			Len	7.8979	7.8967	7.8967	7.8967	7.8967
100	100	0	Cov	0.9614	0.8882	0.5056	0.9636	0.9076
			Len	42.4335	34.4251	6.9115	43.0733	37.6979
400	100	0	Cov	0.9750	0.9468	0.9426	0.9682	0.9346
			Len	43.7023	34.8833	7.2636	39.6100	35.3324
1000	100	0	Cov	0.9766	0.9490	0.9634	0.9604	0.9462
			Len	40.7200	27.7899	8.1925	30.1580	28.4460
100	200	0	Cov	0.9548	0.8926	0.2348	0.9564	0.8936
			Len	60.6161	50.4533	6.0313	60.6210	52.1210
400	200	0	Cov	0.9460	0.8800	0.7352	0.9408	0.8692
			Len	53.9743	44.5909	4.8447	51.6779	45.0022
1000	200	0	Cov	0.9726	0.9418	0.9584	0.9638	0.9248
			Len	60.5156	47.2984	7.5970	52.9147	47.5329

Table 5.122. Etype = 2, J=20, k=p-1, $\psi = 1/\sqrt{p}$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	40	0.1581	Cov	0.9844	0.9346	0.9086	0.9680	0.9274
			Len	161.9680	39.9110	6.9853	9.1384	55.6385
100	100	0.1	Cov	0.9760	0.9206	0.6712	0.9652	0.9114
			Len	399.3103	98.5401	4.3246	9.3489	142.5211
100	200	0.07	Cov	0.9814	0.9210	0.4160	0.9724	0.8914
			Len	912.3747	258.4274	2.2466	9.8268	281.9183
400	40	0.1581	Cov	0.9804	0.9666	0.9710	0.9736	0.9314
			Len	130.3426	22.3853	8.1462	8.4443	21.6264
400	100	0.1	Cov	0.9802	0.9526	0.9406	0.9700	0.9068
			Len	354.8938	69.0009	7.2577	8.4563	63.1102
400	200	0.07	Cov	0.9768	0.9460	0.8100	0.9744	0.8930
			Len	709.5221	142.5953	5.8047	8.5713	129.7019
1000	40	0.1581	Cov	0.9674	0.9648	0.9648	0.9648	0.9648
			Len	7.9914	7.9038	7.9038	7.9038	7.9038
1000	100	0.1	Cov	0.9802	0.9704	0.9716	0.9744	0.9338
			Len	264.6062	37.9248	8.1688	8.4829	34.5788
1000	200	0.07	Cov	0.9764	0.9620	0.9524	0.9718	0.9086
			Len	585.2002	92.6510	7.5944	8.5256	79.8276

Table 5.123. Etype = 2, J=20, k=p-1, $\psi = 0.9$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	40	0.9	Cov	0.9854	0.9634	0.9060	0.9720	0.9426
			Len	686.0242	10.1880	6.9451	9.0482	9.9590
400	40	0.9	Cov	0.9754	0.9626	0.9586	0.9604	0.9584
			Len	30.5694	9.3187	7.4639	7.7195	7.5502
1000	40	0.9	Cov	0.9670	0.9588	0.9590	0.9590	0.9590
			Len	28.2714	8.7817	7.0316	7.0316	7.0316
100	100	0.9	Cov	0.9854	0.9590	0.6914	0.9724	0.9176
			Len	3024.8650	17.4693	4.3063	9.1080	18.3011
400	100	0.9	Cov	0.9822	0.9666	0.9486	0.9736	0.9350
			Len	137.1596	16.9780	7.2639	8.4323	9.7609
1000	100	0.9	Cov	0.9798	0.9726	0.9674	0.9720	0.9602
			Len	131.5229	17.3572	8.1286	8.4236	8.4040
100	200	0.9	Cov	0.9828	0.9516	0.4238	0.9722	0.8882
			Len	10605.4900	32.8438	2.1427	9.0460	33.8312
400	200	0.9	Cov	0.9824	0.9634	0.8120	0.9734	0.9060
			Len	500.0967	29.5161	5.8085	8.4179	15.5416
1000	200	0.9	Cov	0.9804	0.9712	0.9550	0.9720	0.9294
			Len	364.7455	30.6382	7.5801	8.4798	10.9341

Table 5.124. Etype = 2, J=50, k=1, $\psi = 0$

n	p	ψ		Lasso	RL	PLS	PCR	FS
400	20	0	Cov	0.9432	0.9428	0.9390	0.9416	0.9412
			Len	6.4005	6.4079	6.3168	7.0021	6.3514
400	40	0	Cov	0.9522	0.9498	0.9384	0.9500	0.9462
			Len	6.3988	6.3723	6.1548	7.2048	6.2965
400	100	0	Cov	0.9450	0.9434	0.8870	0.9448	0.9356
			Len	6.3962	6.3208	5.6368	7.3475	6.2155
400	200	0	Cov	0.9440	0.9366	0.7290	0.9462	0.9320
			Len	6.3747	6.2500	4.6732	7.3815	6.1354
1000	20	0	Cov	0.9500	0.9498	0.9506	0.9506	0.9506
			Len	6.2950	6.3263	6.2947	6.2947	6.2947
1000	40	0	Cov	0.9414	0.9432	0.9404	0.9456	0.9402
			Len	6.2755	6.3012	6.2323	6.7429	6.2445
1000	100	0	Cov	0.9438	0.9396	0.9292	0.9430	0.9362
			Len	6.2600	6.2507	6.0255	7.0419	6.1524
1000	200	0	Cov	0.9432	0.9416	0.9024	0.9410	0.9346
			Len	6.2530	6.2086	5.6974	7.1547	6.0877

Table 5.125. Etype = 2, J=50, k=1, $\psi = 1/\sqrt{p}$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.2236	Cov	0.9506	0.9490	0.9552	0.9544	0.9504
			Len	7.5901	7.1186	7.8306	7.8977	7.2338
100	40	0.1581	Cov	0.9564	0.9508	0.9552	0.9568	0.9538
			Len	7.6260	7.0776	7.9543	8.0231	7.2221
100	100	0.1	Cov	0.9548	0.9512	0.9572	0.9568	0.9544
			Len	7.6813	7.0319	8.1033	8.1755	7.2312
100	200	0.07	Cov	0.9492	0.9430	0.3694	0.9532	0.9200
			Len	7.2619	6.9162	1.9806	8.0762	6.4327
400	20	0.2236	Cov	0.9476	0.9486	0.9428	0.9496	0.9436
			Len	6.3872	6.4314	6.3045	6.7658	6.3370
400	40	0.1581	Cov	0.9496	0.9488	0.9344	0.9458	0.9440
			Len	6.3937	6.4296	6.1435	6.9736	6.2872
400	100	0.1	Cov	0.9434	0.9448	0.8824	0.9482	0.9332
			Len	6.3754	6.3937	5.6181	7.1498	6.1947
400	200	0.07	Cov	0.9448	0.9460	0.7136	0.9410	0.9372
			Len	6.3898	6.3890	4.7034	7.2537	6.1477
1000	20	0.2236	Cov	0.9420	0.9442	0.9420	0.9420	0.9420
			Len	6.2987	6.3455	6.2984	6.2984	6.2984
1000	40	0.1581	Cov	0.9486	0.9486	0.9432	0.9446	0.9458
			Len	6.2697	6.3377	6.2250	6.6079	6.2367
1000	100	0.1	Cov	0.9484	0.9510	0.9388	0.9514	0.9436
			Len	6.2586	6.3343	6.0236	6.9030	6.1512
1000	200	0.07	Cov	0.9452	0.9474	0.9102	0.9478	0.9368
			Len	6.2503	6.3277	5.6923	7.0434	6.0799

Table 5.126. Etype = 2, J=50, k=1, $\psi = 0.9$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.9	Cov	0.9622	0.9554	0.9568	0.9568	0.9552
			Len	11.4641	7.1477	7.2202	7.2203	7.1482
100	40	0.9	Cov	0.9660	0.9544	0.9556	0.9556	0.9544
			Len	16.2700	7.1169	7.2034	7.2034	7.1184
100	100	0.9	Cov	0.9628	0.9522	0.9538	0.9538	0.9520
			Len	27.5277	7.0810	7.2039	7.2039	7.1037
100	200	0.9	Cov	0.9660	0.9494	0.3876	0.9548	0.9184
			Len	34.7328	7.2738	1.8950	7.3897	6.4533
400	20	0.9	Cov	0.9508	0.9530	0.9472	0.9518	0.9470
			Len	6.4537	6.4494	6.3208	6.4251	6.3489
400	40	0.9	Cov	0.9506	0.9514	0.9360	0.9508	0.9450
			Len	6.5303	6.4281	6.1341	6.4118	6.2712
400	100	0.9	Cov	0.9512	0.9504	0.8856	0.9534	0.9406
			Len	7.9637	6.4211	5.6341	6.4196	6.1965
400	200	0.9	Cov	0.9486	0.9456	0.7188	0.9472	0.9308
			Len	11.4184	6.4088	4.6984	6.4234	6.1293
1000	20	0.9	Cov	0.9508	0.9516	0.9504	0.9504	0.9504
			Len	6.3514	6.3486	6.2962	6.2962	6.2962
1000	40	0.9	Cov	0.9458	0.9458	0.9420	0.9446	0.9418
			Len	6.3598	6.3521	6.2363	6.3084	6.2476
1000	100	0.9	Cov	0.9446	0.9460	0.9296	0.9434	0.9378
			Len	6.3642	6.3448	6.0302	6.3045	6.1579
1000	200	0.9	Cov	0.9434	0.9414	0.9018	0.9428	0.9330
			Len	6.3702	6.3418	5.6905	6.3108	6.0845

Table 5.127. Etype = 2, J=50, k=19, $\psi = 0$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0	Cov	0.9584	0.9252	0.9322	0.9668	0.9516
			Len	18.9583	15.2762	9.0545	19.8850	19.1533
100	40	0	Cov	0.9544	0.9194	0.9034	0.9574	0.9488
			Len	18.9799	15.2839	9.8864	20.2173	19.1771
100	100	0	Cov	0.9564	0.9232	0.8420	0.9612	0.9522
			Len	18.9161	15.2528	10.0530	20.4157	19.1606
400	20	0	Cov	0.9592	0.9466	0.9496	0.9526	0.9406
			Len	17.7479	12.5782	6.8650	15.2967	14.7167
400	40	0	Cov	0.9588	0.9398	0.9462	0.9556	0.9396
			Len	17.7717	12.6147	6.6424	17.2981	14.7264
400	100	0	Cov	0.9584	0.9406	0.9076	0.9554	0.9404
			Len	17.7482	12.5902	6.0566	18.4991	14.7197
400	200	0	Cov	0.9586	0.9454	0.7464	0.9576	0.9442
			Len	17.7658	12.6397	5.0228	18.9566	14.7154
1000	20	0	Cov	0.9570	0.9574	0.9574	0.9574	0.9574
			Len	6.9931	6.9919	6.9919	6.9919	6.9919
1000	40	0	Cov	0.9570	0.9556	0.9536	0.9464	0.9560
			Len	7.2849	6.9812	6.9091	13.8384	6.9916
1000	100	0	Cov	0.9598	0.9576	0.9474	0.9504	0.9594
			Len	7.4455	6.9730	6.6607	17.0307	6.9878
1000	200	0	Cov	0.9604	0.9566	0.9224	0.9528	0.9564
			Len	7.5678	6.9857	6.2667	18.0883	7.0081

Table 5.128. Etype = 2, J=50, k=19, $\psi = 1/\sqrt{p}$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.2236	Cov	0.9606	0.9208	0.9516	0.9522	0.9418
			Len	70.1772	17.0137	7.1955	7.2282	47.1172
100	40	0.1581	Cov	0.9654	0.9098	0.9582	0.9586	0.9420
			Len	69.2113	18.0709	13.4783	13.7013	49.2083
100	100	0.1	Cov	0.9600	0.8736	0.9566	0.9580	0.9302
			Len	67.6777	18.8009	17.0353	17.2557	50.3659
100	200	0.07	Cov	0.9646	0.8966	0.9684	0.9698	0.9266
			Len	78.1272	25.6772	18.3781	18.5874	50.4854
400	20	0.2236	Cov	0.9590	0.9528	0.9522	0.9564	0.9372
			Len	66.0801	11.8086	6.8437	6.9664	17.2978
400	40	0.1581	Cov	0.9596	0.9502	0.9478	0.9562	0.9354
			Len	65.0529	12.5213	6.6600	11.8958	18.5329
400	100	0.1	Cov	0.9634	0.9494	0.9084	0.9608	0.9378
			Len	63.7522	13.4485	6.0602	15.6146	19.6616
400	200	0.07	Cov	0.9584	0.9360	0.7566	0.9552	0.9274
			Len	62.3217	13.9437	5.0488	17.1377	20.2760
1000	20	0.2236	Cov	0.9584	0.9580	0.9580	0.9580	0.9580
			Len	7.0086	6.9872	6.9872	6.9872	6.9872
1000	40	0.1581	Cov	0.9618	0.9544	0.9518	0.9532	0.9546
			Len	23.6899	6.9935	6.9131	10.0250	6.9940
1000	100	0.1	Cov	0.9616	0.9572	0.9466	0.9526	0.9570
			Len	36.7551	7.0878	6.6609	14.4274	6.9887
1000	200	0.07	Cov	0.9676	0.9588	0.9252	0.9548	0.9588
			Len	43.8059	7.3659	6.2614	16.3528	6.9917

Table 5.129. Etype = 2, J=50, k=19, $\psi = 0.9$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.9	Cov	0.9682	0.9358	0.9468	0.9468	0.9396
			Len	230.1111	7.2560	7.1776	7.1776	9.5797
100	40	0.9	Cov	0.9644	0.9426	0.9572	0.9572	0.9376
			Len	330.1891	7.1906	7.3318	7.3319	9.5258
100	100	0.9	Cov	0.9674	0.9220	0.9484	0.9484	0.9330
			Len	523.0168	6.9405	7.3504	7.3505	9.3648
100	200	0.9	Cov	0.9644	0.9320	0.9566	0.9566	0.9278
			Len	892.4198	6.8276	7.3623	7.3623	9.2164
400	20	0.9	Cov	0.9608	0.9496	0.9492	0.9536	0.9456
			Len	86.1834	7.0244	6.8299	6.9510	6.9466
400	40	0.9	Cov	0.9634	0.9520	0.9442	0.9552	0.9490
			Len	57.1676	7.2066	6.6201	7.0176	6.9122
400	100	0.9	Cov	0.9644	0.9502	0.9032	0.9532	0.9450
			Len	124.6415	7.1835	6.0164	7.0517	6.8286
400	200	0.9	Cov	0.9590	0.9484	0.7518	0.9558	0.9410
			Len	238.2169	7.0971	4.9563	7.0688	6.7754
1000	20	0.9	Cov	0.9502	0.9490	0.9520	0.9520	0.9520
			Len	9.2947	6.7964	6.6627	6.6627	6.6627
1000	40	0.9	Cov	0.9556	0.9506	0.9480	0.9502	0.9474
			Len	13.3055	7.0442	6.5553	6.6705	6.5867
1000	100	0.9	Cov	0.9528	0.9446	0.9296	0.9496	0.9414
			Len	20.7900	7.0753	6.2970	6.7065	6.4979
1000	200	0.9	Cov	0.9548	0.9458	0.9122	0.9492	0.9390
			Len	30.1728	7.0457	5.9273	6.7325	6.4411

Table 5.130. Etype = 2, J=50, k=p-1, $\psi = 0$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	40	0	Cov	0.9552	0.9132	0.8972	0.9626	0.9538
			Len	26.5480	21.8828	12.6635	27.9967	26.8942
400	40	0	Cov	0.9586	0.9312	0.9474	0.9548	0.9348
			Len	25.4171	20.3135	6.6681	23.7507	22.5362
1000	40	0	Cov	0.9590	0.9416	0.9532	0.9446	0.9360
			Len	24.3712	16.2510	6.9096	18.5311	18.0250
100	100	0	Cov	0.9522	0.8950	0.8156	0.9642	0.9520
			Len	41.5565	34.3004	20.2161	44.1726	42.3064
400	100	0	Cov	0.9556	0.9174	0.9044	0.9536	0.9290
			Len	40.4580	34.5753	6.0455	39.7366	37.2616
1000	100	0	Cov	0.9620	0.9388	0.9484	0.9530	0.9396
			Len	39.8304	32.4597	6.6682	36.2189	34.1379
100	200	0	Cov	0.9596	0.9138	0.7456	0.9654	0.9506
			Len	61.3696	53.6703	26.7716	62.5747	59.7265
400	200	0	Cov	0.9476	0.9070	0.7164	0.9488	0.9246
			Len	55.3694	48.1885	5.1228	55.5002	51.7576
1000	200	0	Cov	0.9572	0.9238	0.9178	0.9526	0.9264
			Len	57.0099	49.1057	6.2388	54.4820	50.9032

Table 5.131. Etype = 2, J=50, k=p-1, $\psi = 1/\sqrt{p}$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	40	0.1581	Cov	0.9586	0.8942	0.9470	0.9480	0.9312
			Len	140.5067	34.6822	7.2568	7.3007	99.2809
100	100	0.1	Cov	0.9584	0.8684	0.9536	0.9544	0.9286
			Len	345.5624	84.7901	7.4842	7.5420	254.2178
100	200	0.07	Cov	0.9654	0.8774	0.9520	0.9536	0.9262
			Len	801.0432	236.1797	7.9756	8.0465	506.5613
400	40	0.1581	Cov	0.9608	0.9406	0.9406	0.9572	0.9194
			Len	132.0458	25.1414	6.6418	6.9883	39.1995
400	100	0.1	Cov	0.9628	0.9288	0.9122	0.9608	0.9014
			Len	325.0597	65.4746	6.0540	7.0481	105.7312
400	200	0.07	Cov	0.9576	0.9054	0.7590	0.9584	0.8896
			Len	637.1236	130.5701	4.9819	7.1373	215.6005
1000	40	0.1581	Cov	0.9608	0.9492	0.9492	0.9528	0.9286
			Len	128.9721	18.9184	6.8960	6.9834	20.7333
1000	100	0.1	Cov	0.9612	0.9458	0.9486	0.9600	0.9158
			Len	320.4346	53.2134	6.6627	7.0101	63.2724
1000	200	0.07	Cov	0.9660	0.9322	0.9186	0.9530	0.8978
			Len	625.8531	107.5340	6.2703	7.0568	133.2922

Table 5.132. Etype = 2, J=50, k=p-1, $\psi = 0.9$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	40	0.9	Cov	0.9690	0.9384	0.9552	0.9552	0.9338
			Len	675.8627	8.8043	7.1853	7.1853	15.8398
400	40	0.9	Cov	0.9620	0.9480	0.9434	0.9546	0.9374
			Len	265.5928	8.4272	6.6474	6.9738	7.8268
1000	40	0.9	Cov	0.9616	0.9522	0.9544	0.9568	0.9524
			Len	27.8963	8.6637	6.9081	6.9882	7.0419
100	100	0.9	Cov	0.9634	0.9206	0.9516	0.9516	0.9222
			Len	2728.1010	15.2971	7.1634	7.1634	36.5661
400	100	0.9	Cov	0.9642	0.9414	0.9074	0.9546	0.9140
			Len	1817.5780	14.7407	6.0672	6.9756	13.6985
1000	100	0.9	Cov	0.9624	0.9550	0.9490	0.9570	0.9344
			Len	119.0170	15.3255	6.6580	6.9867	9.3890
100	200	0.9	Cov	0.9654	0.9220	0.9486	0.9486	0.9244
			Len	9352.3730	28.9194	7.2055	7.2055	71.5173
400	200	0.9	Cov	0.9612	0.9402	0.7578	0.9520	0.8974
			Len	6129.4250	26.3750	5.0168	6.9826	25.1643
1000	200	0.9	Cov	0.9638	0.9534	0.9282	0.9590	0.9122
			Len	417.8301	26.8580	6.2561	6.9922	15.8057

Table 5.133. Etype = 3, J=5, k=1, $\psi = 0$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0	Cov	0.9226	0.9446	0.9218	0.9218	0.9218
			Len	3.8302	3.9042	3.8351	3.8351	3.8351
100	40	0	Cov	0.9230	0.9292	0.8278	0.9152	0.8502
			Len	3.5680	3.8366	3.4180	4.5491	3.5122
100	100	0	Cov	0.9170	0.9026	0.1430	0.9216	0.7322
			Len	3.4555	3.6636	0.9477	5.0643	2.9244
100	200	0	Cov	0.9256	0.8870	0.0012	0.9386	0.6274
			Len	3.4581	3.5273	0.0027	5.2838	2.4863
400	20	0	Cov	0.9468	0.9488	0.9466	0.9466	0.9466
			Len	3.4027	3.3568	3.4103	3.4103	3.4103
400	40	0	Cov	0.9396	0.9490	0.9384	0.9384	0.9384
			Len	3.4401	3.4134	3.4467	3.4467	3.4467
400	100	0	Cov	0.9034	0.9260	0.8814	0.8960	0.8834
			Len	3.2795	3.4435	3.3264	3.6255	3.3291
400	200	0	Cov	0.8808	0.8974	0.7020	0.8948	0.7700
			Len	3.0886	3.3829	2.8176	4.1603	2.9986
1000	20	0	Cov	0.9480	0.9498	0.9468	0.9468	0.9468
			Len	3.2472	3.2037	3.2557	3.2557	3.2557
1000	40	0	Cov	0.9436	0.9472	0.9434	0.9434	0.9434
			Len	3.3125	3.2613	3.3207	3.3207	3.3207
1000	100	0	Cov	0.9266	0.9370	0.9266	0.9266	0.9266
			Len	3.3717	3.3409	3.3784	3.3784	3.3784
1000	200	0	Cov	0.9000	0.9308	0.8978	0.8978	0.8978
			Len	3.3225	3.3778	3.3277	3.3277	3.3277

Table 5.134. Etype = 3, J=5, k=1, $\psi = 1/\sqrt{p}$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.2236	Cov	0.9232	0.9572	0.9212	0.9212	0.9212
			Len	3.8088	3.8805	3.8162	3.8162	3.8162
100	40	0.1581	Cov	0.9234	0.9548	0.8244	0.9238	0.8546
			Len	3.5689	3.8850	3.4172	4.3544	3.5170
100	100	0.1	Cov	0.9210	0.9544	0.1426	0.9324	0.7318
			Len	3.4673	3.8915	0.9802	4.8602	2.9334
100	200	0.07	Cov	0.9214	0.9480	0.0002	0.9322	0.6422
			Len	3.4583	3.8885	0.0040	5.1050	2.4861
400	20	0.2236	Cov	0.9458	0.9530	0.9462	0.9462	0.9462
			Len	3.3948	3.3023	3.4060	3.4060	3.4060
400	40	0.1581	Cov	0.9386	0.9494	0.9374	0.9374	0.9374
			Len	3.4378	3.3543	3.4468	3.4468	3.4468
400	100	0.1	Cov	0.9016	0.9484	0.8808	0.8952	0.8796
			Len	3.2851	3.4158	3.3340	3.5872	3.3354
400	200	0.07	Cov	0.8890	0.9452	0.6918	0.9014	0.7668
			Len	3.0888	3.3986	2.8112	4.0741	2.9935
1000	20	0.2236	Cov	0.9452	0.9486	0.9454	0.9454	0.9454
			Len	3.2445	3.1660	3.2570	3.2570	3.2570
1000	40	0.1581	Cov	0.9434	0.9504	0.9440	0.9440	0.9440
			Len	3.3101	3.2029	3.3215	3.3215	3.3215
1000	100	0.1	Cov	0.9268	0.9432	0.9268	0.9268	0.9268
			Len	3.3667	3.2671	3.3760	3.3760	3.3760
1000	200	0.07	Cov	0.8986	0.9416	0.8980	0.8980	0.8980
			Len	3.3201	3.3404	3.3267	3.3267	3.3267

Table 5.135. Etype = 3, J=5, k=1, $\psi = 0.9$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.9	Cov	0.9586	0.9598	0.9240	0.9240	0.9240
			Len	3.7951	3.8078	3.8169	3.8169	3.8169
100	40	0.9	Cov	0.9656	0.9650	0.8356	0.9440	0.8640
			Len	3.7948	3.8249	3.4331	3.8363	3.5235
100	100	0.9	Cov	0.9670	0.9616	0.1402	0.9532	0.7248
			Len	3.8069	3.8881	0.9642	3.8560	2.9246
100	200	0.9	Cov	0.9656	0.9562	0.0018	0.9540	0.6224
			Len	3.9116	3.9213	0.0035	3.8732	2.4780
400	20	0.9	Cov	0.9516	0.9520	0.9420	0.9420	0.9420
			Len	3.2372	3.2639	3.4003	3.4003	3.4003
400	40	0.9	Cov	0.9496	0.9500	0.9310	0.9310	0.9310
			Len	3.2297	3.2803	3.4392	3.4392	3.4392
400	100	0.9	Cov	0.9506	0.9472	0.8756	0.9030	0.8752
			Len	3.2509	3.3072	3.3256	3.3915	3.3280
400	200	0.9	Cov	0.9516	0.9490	0.6998	0.9248	0.7796
			Len	3.2846	3.3155	2.8056	3.3936	2.9895
1000	20	0.9	Cov	0.9530	0.9528	0.9506	0.9506	0.9506
			Len	3.1177	3.1427	3.2548	3.2548	3.2548
1000	40	0.9	Cov	0.9528	0.9514	0.9458	0.9458	0.9458
			Len	3.1234	3.1567	3.3205	3.3205	3.3205
1000	100	0.9	Cov	0.9504	0.9488	0.9260	0.9260	0.9260
			Len	3.1565	3.1689	3.3776	3.3776	3.3776
1000	200	0.9	Cov	0.9464	0.9474	0.8872	0.8872	0.8872
			Len	3.2032	3.1796	3.3254	3.3254	3.3254

Table 5.136. Etype = 3, J=5, k=19, $\psi = 0$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0	Cov	0.9776	0.9778	0.9778	0.9778	0.9778
			Len	5.6340	5.6294	5.6294	5.6294	5.6294
100	40	0	Cov	0.9818	0.9754	0.9392	0.9670	0.9782
			Len	12.7926	6.2596	5.0102	15.0668	5.9242
100	100	0	Cov	0.9830	0.9668	0.2186	0.9828	0.9692
			Len	15.9409	8.5272	1.4652	20.0250	6.6896
100	200	0	Cov	0.9838	0.9498	0.0008	0.9828	0.9234
			Len	17.2683	10.3000	0.0080	21.3071	7.4545
400	20	0	Cov	0.9768	0.9756	0.9756	0.9756	0.9756
			Len	4.3357	4.3314	4.3314	4.3314	4.3314
400	40	0	Cov	0.9660	0.9694	0.9658	0.9658	0.9658
			Len	4.3419	4.3535	4.3547	4.3547	4.3547
400	100	0	Cov	0.9460	0.9558	0.9326	0.9012	0.9324
			Len	4.1461	4.3258	4.1558	7.3943	4.1589
400	200	0	Cov	0.9488	0.9450	0.7938	0.9176	0.8716
			Len	4.1011	4.2142	3.4609	12.4733	3.7503
1000	20	0	Cov	0.9604	0.9598	0.9598	0.9598	0.9598
			Len	3.5669	3.5601	3.5601	3.5601	3.5601
1000	40	0	Cov	0.9554	0.9568	0.9546	0.9546	0.9546
			Len	3.6120	3.6013	3.6282	3.6282	3.6282
1000	100	0	Cov	0.9426	0.9526	0.9428	0.9428	0.9428
			Len	3.6562	3.6564	3.6790	3.6790	3.6790
1000	200	0	Cov	0.9228	0.9440	0.9200	0.9200	0.9200
			Len	3.5991	3.6808	3.6173	3.6173	3.6173

Table 5.137. Etype = 3, J=5, k=19, $\psi = 1/\sqrt{p}$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.2236	Cov	0.9814	0.9834	0.9834	0.9834	0.9834
			Len	5.7611	5.6451	5.6451	5.6451	5.6451
100	40	0.1581	Cov	0.9920	0.9688	0.9338	0.9710	0.9674
			Len	46.2975	9.3708	4.9680	10.3597	6.6955
100	100	0.1	Cov	0.9922	0.9486	0.2248	0.9846	0.9378
			Len	58.2488	14.1642	1.4816	16.7227	8.8008
100	200	0.07	Cov	0.9920	0.9354	0.0024	0.9816	0.8748
			Len	64.4681	16.7586	0.0114	19.6707	10.2374
400	20	0.2236	Cov	0.9740	0.9756	0.9756	0.9756	0.9756
			Len	4.4502	4.3278	4.3278	4.3278	4.3278
400	40	0.1581	Cov	0.9754	0.9740	0.9708	0.9708	0.9708
			Len	4.4544	4.3575	4.3595	4.3595	4.3595
400	100	0.1	Cov	0.9712	0.9692	0.9382	0.9148	0.9404
			Len	4.4315	4.3639	4.1684	6.5713	4.1728
400	200	0.07	Cov	0.9664	0.9638	0.7890	0.9200	0.8678
			Len	4.3929	4.3455	3.4689	11.2693	3.7608
1000	20	0.2236	Cov	0.9604	0.9596	0.9596	0.9596	0.9596
			Len	3.7059	3.5606	3.5606	3.5606	3.5606
1000	40	0.1581	Cov	0.9578	0.9566	0.9562	0.9562	0.9562
			Len	3.7129	3.5963	3.6306	3.6306	3.6306
1000	100	0.1	Cov	0.9540	0.9544	0.9406	0.9406	0.9406
			Len	3.7204	3.6339	3.6874	3.6874	3.6874
1000	200	0.07	Cov	0.9564	0.9570	0.9198	0.9198	0.9198
			Len	3.7178	3.6523	3.6185	3.6185	3.6185

Table 5.138. Etype = 3, J=5, k=19, $\psi = 0.9$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.9	Cov	0.9860	0.9646	0.9546	0.9546	0.9546
			Len	12.3532	5.2507	4.7728	4.7728	4.7728
100	40	0.9	Cov	0.9858	0.9728	0.8922	0.9686	0.9116
			Len	17.4712	5.6409	4.1691	4.8085	4.3378
100	100	0.9	Cov	0.9832	0.9660	0.1634	0.9698	0.8064
			Len	27.5324	5.6146	1.1353	4.9499	3.6492
100	200	0.9	Cov	0.9872	0.9570	0.0016	0.9670	0.7012
			Len	40.8098	5.3460	0.0042	5.0047	3.1168
400	20	0.9	Cov	0.9720	0.9610	0.9594	0.9594	0.9594
			Len	10.3137	4.5248	3.9536	3.9536	3.9536
400	40	0.9	Cov	0.9706	0.9598	0.9512	0.9512	0.9512
			Len	14.3319	5.0091	3.8847	3.8847	3.8847
400	100	0.9	Cov	0.9658	0.9598	0.9028	0.9286	0.9074
			Len	22.9714	5.0501	3.6872	3.8064	3.6912
400	200	0.9	Cov	0.9678	0.9554	0.7444	0.9432	0.8224
			Len	31.8920	4.9775	3.0758	3.9101	3.3132
1000	20	0.9	Cov	0.9596	0.9606	0.9594	0.9594	0.9594
			Len	9.7000	4.2030	3.5509	3.5509	3.5509
1000	40	0.9	Cov	0.9622	0.9574	0.9538	0.9538	0.9538
			Len	13.5762	4.7975	3.5629	3.5629	3.5629
1000	100	0.9	Cov	0.9574	0.9542	0.9432	0.9432	0.9432
			Len	21.9140	4.9090	3.6019	3.6019	3.6019
1000	200	0.9	Cov	0.9580	0.9460	0.9136	0.9136	0.9136
			Len	30.2704	4.9036	3.5268	3.5268	3.5268

Table 5.139. Etype = 3, J=5, k=p-1, $\psi = 0$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	40	0	Cov	0.9812	0.9398	0.9356	0.9674	0.9056
			Len	27.0555	18.0519	4.9611	20.5946	17.2978
400	40	0	Cov	0.9762	0.9760	0.9760	0.9760	0.9760
			Len	4.6790	4.6697	4.6697	4.6697	4.6697
1000	40	0	Cov	0.9704	0.9706	0.9706	0.9706	0.9706
			Len	4.0545	4.0441	4.0441	4.0441	4.0441
100	100	0	Cov	0.9244	0.7888	0.1640	0.9140	0.7070
			Len	34.9969	24.5169	1.3056	32.6585	22.2452
400	100	0	Cov	0.9798	0.9448	0.9664	0.9356	0.9116
			Len	33.3676	18.3124	5.1083	17.3951	17.7940
1000	100	0	Cov	0.9800	0.9800	0.9800	0.9800	0.9800
			Len	4.6811	4.6590	4.6590	4.6590	4.6590
100	200	0	Cov	0.9160	0.7600	0.0010	0.9172	0.5984
			Len	49.8590	34.8547	0.0171	48.9535	28.9974
400	200	0	Cov	0.9760	0.9438	0.8682	0.9600	0.9062
			Len	34.7478	20.2067	4.2485	33.1043	18.1816
1000	200	0	Cov	0.9784	0.9778	0.9778	0.9778	0.9778
			Len	5.2496	5.2097	5.2097	5.2097	5.2097

Table 5.140. Etype = 3, J=5, k=p-1, $\psi = 1/\sqrt{p}$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	40	0.1581	Cov	0.9950	0.9454	0.9410	0.9840	0.8876
			Len	111.9310	23.6763	4.9821	5.7325	19.4589
100	100	0.1	Cov	0.9920	0.9200	0.2034	0.9852	0.7988
			Len	332.3305	71.5824	1.3766	6.2761	50.2735
100	200	0.07	Cov	0.9912	0.9016	0.0016	0.9848	0.7260
			Len	712.0865	150.7050	0.0055	7.1587	92.6378
400	40	0.1581	Cov	0.9782	0.9754	0.9754	0.9754	0.9754
			Len	7.0948	4.6777	4.6777	4.6777	4.6777
400	100	0.1	Cov	0.9904	0.9642	0.9736	0.9812	0.9272
			Len	119.5054	20.7053	5.1052	5.2454	17.8558
400	200	0.07	Cov	0.9902	0.9490	0.8674	0.9696	0.8964
			Len	161.7559	32.8690	4.2537	22.2694	20.8019
1000	40	0.1581	Cov	0.9744	0.9684	0.9684	0.9684	0.9684
			Len	6.2624	4.0353	4.0353	4.0353	4.0353
1000	100	0.1	Cov	0.9844	0.9774	0.9774	0.9774	0.9774
			Len	16.3846	4.6526	4.6526	4.6526	4.6526
1000	200	0.07	Cov	0.9894	0.9766	0.9766	0.9766	0.9766
			Len	36.4034	5.2074	5.2074	5.2074	5.2074

Table 5.141. Etype = 3, J=5, k=p-1, $\psi = 0.9$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	40	0.9	Cov	0.9902	0.9748	0.9124	0.9810	0.9320
			Len	38.7914	8.2395	4.5324	5.1281	4.8568
400	40	0.9	Cov	0.9800	0.9758	0.9742	0.9742	0.9742
			Len	33.6180	7.7883	4.4343	4.4343	4.4343
1000	40	0.9	Cov	0.9756	0.9642	0.9678	0.9678	0.9678
			Len	31.4668	7.4662	4.0324	4.0324	4.0324
100	100	0.9	Cov	0.9966	0.9776	0.1938	0.9858	0.8116
			Len	185.6657	18.4464	1.3474	5.6151	6.7027
400	100	0.9	Cov	0.9914	0.9840	0.9534	0.9682	0.9484
			Len	150.6547	18.0687	4.7176	4.8233	4.8279
1000	100	0.9	Cov	0.9882	0.9836	0.9778	0.9778	0.9778
			Len	141.6021	17.3735	4.6547	4.6547	4.6547
100	200	0.9	Cov	0.9970	0.9670	0.0018	0.9846	0.7288
			Len	875.3991	31.6983	0.0049	5.6368	10.6829
400	200	0.9	Cov	0.9924	0.9780	0.8376	0.9722	0.9050
			Len	200.1816	16.6949	3.7951	5.2076	4.4877
1000	200	0.9	Cov	0.9964	0.9930	0.9774	0.9774	0.9774
			Len	448.1583	36.8166	5.2090	5.2090	5.2090

Table 5.142. Etype = 3, J=10, k=1, $\psi = 0$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0	Cov	0.9546	0.9538	0.9258	0.9452	0.9346
			Len	3.7684	3.8879	3.8227	4.9171	3.8475
100	40	0	Cov	0.9482	0.9390	0.8246	0.9474	0.9038
			Len	3.7362	3.8718	3.4257	5.3687	3.7317
100	100	0	Cov	0.9432	0.9256	0.2812	0.9450	0.8548
			Len	3.7389	3.8060	1.4069	5.6672	3.5137
100	200	0	Cov	0.9492	0.9224	0.0354	0.9510	0.8208
			Len	3.7805	3.7466	0.1376	5.7942	3.3133
400	20	0	Cov	0.9444	0.9486	0.9432	0.9432	0.9432
			Len	3.4068	3.3609	3.4141	3.4141	3.4141
400	40	0	Cov	0.9334	0.9414	0.9336	0.9336	0.9336
			Len	3.4378	3.4075	3.4445	3.4445	3.4445
400	100	0	Cov	0.9326	0.9350	0.8822	0.9206	0.8968
			Len	3.2627	3.4441	3.3286	4.4796	3.3760
400	200	0	Cov	0.9292	0.9204	0.7042	0.9248	0.8538
			Len	3.2021	3.4247	2.8160	4.8197	3.2302
1000	20	0	Cov	0.9468	0.9464	0.9466	0.9466	0.9466
			Len	3.2497	3.2061	3.2582	3.2582	3.2582
1000	40	0	Cov	0.9466	0.9504	0.9462	0.9462	0.9462
			Len	3.3140	3.2628	3.3221	3.3221	3.3221
1000	100	0	Cov	0.9288	0.9418	0.9284	0.9284	0.9284
			Len	3.3701	3.3397	3.3768	3.3768	3.3768
1000	200	0	Cov	0.9250	0.9310	0.8908	0.9212	0.8998
			Len	3.2194	3.3777	3.3292	4.2303	3.3429

Table 5.143. Etype = 3, J=10, k=1, $\psi = 1/\sqrt{p}$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.2236	Cov	0.9514	0.9582	0.9218	0.9420	0.9284
			Len	3.7993	3.8891	3.8450	4.6052	3.8746
100	40	0.1581	Cov	0.9512	0.9596	0.8224	0.9514	0.9054
			Len	3.7495	3.8850	3.4288	5.0472	3.7337
100	100	0.1	Cov	0.9468	0.9524	0.3166	0.9488	0.8630
			Len	3.7563	3.8971	1.4899	5.4359	3.5221
100	200	0.07	Cov	0.9482	0.9472	0.0478	0.9490	0.8328
			Len	3.7784	3.8775	0.1971	5.6099	3.3224
400	20	0.2236	Cov	0.9458	0.9524	0.9456	0.9456	0.9456
			Len	3.3999	3.3105	3.4110	3.4110	3.4110
400	40	0.1581	Cov	0.9310	0.9504	0.9300	0.9300	0.9300
			Len	3.4400	3.3543	3.4490	3.4490	3.4490
400	100	0.1	Cov	0.9284	0.9476	0.8682	0.9244	0.8906
			Len	3.2676	3.3566	3.3308	4.3255	3.3748
400	200	0.07	Cov	0.9250	0.9426	0.7010	0.9246	0.8450
			Len	3.2081	3.3608	2.8123	4.6796	3.2287
1000	20	0.2236	Cov	0.9466	0.9510	0.9468	0.9468	0.9468
			Len	3.2458	3.1673	3.2581	3.2581	3.2581
1000	40	0.1581	Cov	0.9392	0.9474	0.9384	0.9384	0.9384
			Len	3.3134	3.2052	3.3247	3.3247	3.3247
1000	100	0.1	Cov	0.9280	0.9446	0.9266	0.9266	0.9266
			Len	3.3674	3.2702	3.3767	3.3767	3.3767
1000	200	0.07	Cov	0.9236	0.9492	0.8940	0.9230	0.9008
			Len	3.2220	3.2605	3.3297	4.1395	3.3443

Table 5.144. Etype = 3, J=10, k=1, $\psi = 0.9$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.9	Cov	0.9608	0.9616	0.9244	0.9538	0.9322
			Len	3.7860	3.7993	3.8118	3.9068	3.8413
100	40	0.9	Cov	0.9670	0.9666	0.8294	0.9626	0.9018
			Len	3.8001	3.8264	3.4297	3.9340	3.7261
100	100	0.9	Cov	0.9628	0.9564	0.2920	0.9590	0.8622
			Len	4.2284	3.8908	1.4485	3.9552	3.4988
100	200	0.9	Cov	0.9678	0.9610	0.0542	0.9654	0.8298
			Len	5.9374	3.9317	0.1745	3.9763	3.3083
400	20	0.9	Cov	0.9504	0.9500	0.9436	0.9436	0.9436
			Len	3.2407	3.2689	3.4074	3.4074	3.4074
400	40	0.9	Cov	0.9484	0.9478	0.9274	0.9274	0.9274
			Len	3.2405	3.2920	3.4445	3.4445	3.4445
400	100	0.9	Cov	0.9504	0.9474	0.8806	0.9372	0.8958
			Len	3.2444	3.3030	3.3211	3.4574	3.3695
400	200	0.9	Cov	0.9512	0.9450	0.6986	0.9380	0.8478
			Len	3.2905	3.3223	2.8100	3.4666	3.2250
1000	20	0.9	Cov	0.9526	0.9530	0.9488	0.9488	0.9488
			Len	3.1182	3.1426	3.2567	3.2567	3.2567
1000	40	0.9	Cov	0.9550	0.9554	0.9474	0.9474	0.9474
			Len	3.1218	3.1549	3.3196	3.3196	3.3196
1000	100	0.9	Cov	0.9516	0.9504	0.9286	0.9286	0.9286
			Len	3.1587	3.1709	3.3782	3.3782	3.3782
1000	200	0.9	Cov	0.9552	0.9528	0.8994	0.9408	0.9054
			Len	3.2045	3.1818	3.3259	3.3907	3.3398

Table 5.145. Etype = 3, J=10, k=19, $\psi = 0$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0	Cov	0.9788	0.9524	0.9646	0.9666	0.9398
			Len	19.6001	13.2688	4.9286	15.0776	13.8277
100	40	0	Cov	0.9788	0.9534	0.8980	0.9726	0.9428
			Len	19.6749	13.4095	4.3629	18.8059	13.8385
100	100	0	Cov	0.9768	0.9448	0.3628	0.9766	0.9318
			Len	19.5973	13.5437	2.1058	20.7390	13.6591
100	200	0	Cov	0.9720	0.9354	0.0418	0.9700	0.9048
			Len	19.1471	13.5717	0.3423	20.7451	13.0908
400	20	0	Cov	0.9724	0.9734	0.9734	0.9734	0.9734
			Len	4.3367	4.3322	4.3322	4.3322	4.3322
400	40	0	Cov	0.9736	0.9758	0.9730	0.9730	0.9730
			Len	4.3342	4.3438	4.3478	4.3478	4.3478
400	100	0	Cov	0.9724	0.9692	0.9366	0.9480	0.9560
			Len	4.4685	4.3381	4.1506	14.0484	4.2561
400	200	0	Cov	0.9664	0.9642	0.7964	0.9576	0.9392
			Len	4.6656	4.3183	3.4556	16.6834	4.1455
1000	20	0	Cov	0.9590	0.9588	0.9588	0.9588	0.9588
			Len	3.5649	3.5583	3.5583	3.5583	3.5583
1000	40	0	Cov	0.9590	0.9606	0.9580	0.9580	0.9580
			Len	3.6131	3.6018	3.6279	3.6279	3.6279
1000	100	0	Cov	0.9496	0.9548	0.9488	0.9488	0.9488
			Len	3.6619	3.6631	3.6845	3.6845	3.6845
1000	200	0	Cov	0.9514	0.9532	0.9236	0.9146	0.9296
			Len	3.5758	3.6846	3.6169	11.1176	3.6391

Table 5.146. Etype = 3, J=10, k=19, $\psi = 1/\sqrt{p}$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.2236	Cov	0.9878	0.9646	0.9610	0.9772	0.9410
			Len	73.8863	15.0499	4.9320	5.1319	14.7297
100	40	0.1581	Cov	0.9866	0.9532	0.9070	0.9792	0.9290
			Len	76.8949	17.6715	4.3534	12.3721	16.1603
100	100	0.1	Cov	0.9840	0.9408	0.4032	0.9810	0.9070
			Len	78.8115	20.2014	2.1698	17.5847	17.6214
100	200	0.07	Cov	0.9888	0.9318	0.0588	0.9792	0.8740
			Len	83.0431	22.5835	0.4851	19.7142	18.1619
400	20	0.2236	Cov	0.9706	0.9714	0.9714	0.9714	0.9714
			Len	4.4511	4.3280	4.3280	4.3280	4.3280
400	40	0.1581	Cov	0.9700	0.9700	0.9638	0.9638	0.9638
			Len	4.4400	4.3425	4.3493	4.3493	4.3493
400	100	0.1	Cov	0.9710	0.9698	0.9374	0.9502	0.9550
			Len	4.5890	4.3514	4.1561	11.7677	4.2597
400	200	0.07	Cov	0.9716	0.9676	0.7910	0.9608	0.9352
			Len	6.6530	4.3479	3.4572	14.9650	4.1557
1000	20	0.2236	Cov	0.9604	0.9614	0.9614	0.9614	0.9614
			Len	3.7036	3.5590	3.5590	3.5590	3.5590
1000	40	0.1581	Cov	0.9558	0.9586	0.9568	0.9568	0.9568
			Len	3.7171	3.6013	3.6350	3.6350	3.6350
1000	100	0.1	Cov	0.9564	0.9528	0.9434	0.9434	0.9434
			Len	3.7123	3.6267	3.6790	3.6790	3.6790
1000	200	0.07	Cov	0.9492	0.9486	0.9134	0.9052	0.9160
			Len	3.7163	3.6512	3.6149	10.0234	3.6356

Table 5.147. Etype = 3, J=10, k=19, $\psi = 0.9$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.9	Cov	0.9872	0.9696	0.9620	0.9818	0.9642
			Len	46.4625	5.2638	4.7516	4.8899	4.9430
100	40	0.9	Cov	0.9860	0.9640	0.8820	0.9770	0.9408
			Len	40.8380	5.6230	4.1615	5.0899	4.7882
100	100	0.9	Cov	0.9842	0.9644	0.3518	0.9746	0.9160
			Len	121.7086	5.5387	1.7084	5.2560	4.5443
100	200	0.9	Cov	0.9880	0.9594	0.0530	0.9764	0.8856
			Len	338.2368	5.2524	0.2093	5.3096	4.3166
400	20	0.9	Cov	0.9688	0.9652	0.9672	0.9672	0.9672
			Len	10.3028	4.5201	3.9529	3.9529	3.9529
400	40	0.9	Cov	0.9722	0.9588	0.9508	0.9508	0.9508
			Len	14.3214	5.0185	3.8862	3.8862	3.8862
400	100	0.9	Cov	0.9714	0.9566	0.9074	0.9514	0.9226
			Len	22.9580	5.0681	3.6958	4.0828	3.7890
400	200	0.9	Cov	0.9676	0.9594	0.7454	0.9568	0.8904
			Len	31.8857	4.9742	3.0828	4.1788	3.6454
1000	20	0.9	Cov	0.9642	0.9586	0.9582	0.9582	0.9582
			Len	9.7005	4.2009	3.5545	3.5545	3.5545
1000	40	0.9	Cov	0.9664	0.9600	0.9568	0.9568	0.9568
			Len	13.5838	4.8044	3.5640	3.5640	3.5640
1000	100	0.9	Cov	0.9618	0.9552	0.9348	0.9348	0.9348
			Len	21.9143	4.9263	3.6006	3.6006	3.6006
1000	200	0.9	Cov	0.9608	0.9550	0.9104	0.9474	0.9178
			Len	30.2962	4.9202	3.5235	3.7862	3.5440

Table 5.148. Etype = 3, J=10, k=p-1, $\psi = 0$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	40	0	Cov	0.9794	0.9358	0.8934	0.9738	0.9240
			Len	28.7206	21.4576	4.2258	25.6033	21.6939
400	40	0	Cov	0.9722	0.9718	0.9718	0.9718	0.9718
			Len	4.6726	4.6645	4.6645	4.6645	4.6645
1000	40	0	Cov	0.9718	0.9710	0.9710	0.9710	0.9710
			Len	4.0490	4.0371	4.0371	4.0371	4.0371
100	100	0	Cov	0.9540	0.8652	0.2800	0.9478	0.8392
			Len	40.5428	30.9988	2.6673	39.4264	30.9970
400	100	0	Cov	0.9784	0.9426	0.9508	0.9652	0.9212
			Len	41.1893	29.3608	4.4661	32.7627	28.7542
1000	100	0	Cov	0.9746	0.9746	0.9746	0.9746	0.9746
			Len	4.6786	4.6569	4.6569	4.6569	4.6569
100	200	0	Cov	0.9468	0.8376	0.0350	0.9514	0.7954
			Len	56.7085	43.7123	0.8558	56.2363	42.0791
400	200	0	Cov	0.9312	0.8432	0.7130	0.9112	0.8148
			Len	49.5097	37.7606	2.9329	44.9334	36.5774
1000	200	0	Cov	0.9816	0.9448	0.9632	0.9592	0.9242
			Len	56.0662	38.0983	4.5456	40.9701	37.1177

Table 5.149. Etype = 3, J=10, k=p-1, $\psi = 1/\sqrt{p}$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	40	0.1581	Cov	0.9876	0.9516	0.8962	0.9794	0.9116
			Len	160.2108	36.4350	4.3762	5.3188	33.5340
100	100	0.1	Cov	0.9846	0.9212	0.3634	0.9818	0.8598
			Len	411.6806	97.1076	1.8084	5.9039	85.9486
100	200	0.07	Cov	0.9834	0.9122	0.0638	0.9804	0.8216
			Len	870.5535	211.1051	0.2408	6.8403	166.3864
400	40	0.1581	Cov	0.9778	0.9778	0.9778	0.9778	0.9778
			Len	7.0944	4.6720	4.6720	4.6720	4.6720
400	100	0.1	Cov	0.9828	0.9558	0.9486	0.9808	0.8944
			Len	258.1246	45.6793	4.4678	4.8153	37.9353
400	200	0.07	Cov	0.9830	0.9418	0.8200	0.9786	0.8686
			Len	569.7375	104.8685	3.7179	5.0964	80.7645
1000	40	0.1581	Cov	0.9738	0.9712	0.9712	0.9712	0.9712
			Len	6.2691	4.0395	4.0395	4.0395	4.0395
1000	100	0.1	Cov	0.9854	0.9746	0.9746	0.9746	0.9746
			Len	16.3900	4.6592	4.6592	4.6592	4.6592
1000	200	0.07	Cov	0.9868	0.9620	0.9638	0.9794	0.9060
			Len	362.5307	56.2049	4.5509	4.7610	46.3504

Table 5.150. Etype = 3, J=10, k=p-1, $\psi = 0.9$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	40	0.9	Cov	0.9926	0.9690	0.9084	0.9840	0.9352
			Len	186.9498	7.8522	4.3641	5.0806	5.9160
400	40	0.9	Cov	0.9848	0.9742	0.9724	0.9724	0.9724
			Len	33.5986	7.8173	4.4396	4.4396	4.4396
1000	40	0.9	Cov	0.9754	0.9722	0.9744	0.9744	0.9744
			Len	31.4384	7.4723	4.0335	4.0335	4.0335
100	100	0.9	Cov	0.9900	0.9578	0.3676	0.9846	0.8732
			Len	1633.5880	15.6240	1.7824	5.0723	10.5509
400	100	0.9	Cov	0.9890	0.9826	0.9478	0.9774	0.9286
			Len	142.2156	17.0294	4.4574	4.6716	5.9278
1000	100	0.9	Cov	0.9888	0.9818	0.9772	0.9772	0.9772
			Len	141.5850	17.4739	4.6587	4.6587	4.6587
100	200	0.9	Cov	0.9902	0.9538	0.0630	0.9800	0.8394
			Len	7570.0150	28.5303	0.2115	5.0610	19.0220
400	200	0.9	Cov	0.9892	0.9754	0.8162	0.9788	0.8800
			Len	393.1899	31.0077	3.7086	4.6724	9.5054

Table 5.151. Etype = 3, J=20, k=1, $\psi = 0$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0	Cov	0.9594	0.9532	0.9248	0.9540	0.9450
			Len	3.8409	3.8864	3.8254	5.6337	3.9032
100	40	0	Cov	0.9632	0.9584	0.8412	0.9582	0.9416
			Len	3.8833	3.8989	3.4697	5.8620	3.8897
100	100	0	Cov	0.9582	0.9438	0.5258	0.9526	0.9332
			Len	3.9306	3.8773	2.0990	6.0233	3.8390
100	200	0	Cov	0.9564	0.9362	0.2422	0.9582	0.9176
			Len	3.9901	3.8542	0.9016	6.0676	3.7892
400	20	0	Cov	0.9422	0.9462	0.9428	0.9428	0.9428
			Len	3.4094	3.3576	3.4169	3.4169	3.4169
400	40	0	Cov	0.9380	0.9396	0.9256	0.9310	0.9306
			Len	3.3152	3.4026	3.4460	4.5002	3.4440
400	100	0	Cov	0.9450	0.9442	0.8790	0.9400	0.9192
			Len	3.2690	3.4360	3.3205	5.0164	3.4274
400	200	0	Cov	0.9430	0.9318	0.7060	0.9424	0.8996
			Len	3.2537	3.4444	2.8099	5.2109	3.3857
1000	20	0	Cov	0.9520	0.9556	0.9520	0.9520	0.9520
			Len	3.2445	3.2015	3.2530	3.2530	3.2530
1000	40	0	Cov	0.9406	0.9454	0.9404	0.9404	0.9404
			Len	3.3152	3.2640	3.3233	3.3233	3.3233
1000	100	0	Cov	0.9376	0.9386	0.9254	0.9296	0.9266
			Len	3.2337	3.3307	3.3740	4.3942	3.3730
1000	200	0	Cov	0.9362	0.9326	0.8882	0.9348	0.9110
			Len	3.1866	3.3657	3.3240	4.8206	3.3687

Table 5.152. Etype = 3, J=20, k=1, $\psi = 1/\sqrt{p}$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.2236	Cov	0.9594	0.9550	0.9246	0.9534	0.9450
			Len	3.8479	3.8475	3.8151	5.1233	3.8882
100	40	0.1581	Cov	0.9542	0.9552	0.8442	0.9536	0.9372
			Len	3.9122	3.8764	3.4893	5.4462	3.8787
100	100	0.1	Cov	0.9608	0.9570	0.6168	0.9620	0.9352
			Len	3.9827	3.8779	2.3433	5.7160	3.8349
100	200	0.07	Cov	0.9588	0.9530	0.3786	0.9548	0.9204
			Len	4.0711	3.8829	1.2928	5.8581	3.7789
400	20	0.2236	Cov	0.9418	0.9488	0.9406	0.9406	0.9406
			Len	3.4059	3.3140	3.4171	3.4171	3.4171
400	40	0.1581	Cov	0.9460	0.9530	0.9318	0.9448	0.9350
			Len	3.3186	3.3155	3.4452	4.2617	3.4446
400	100	0.1	Cov	0.9410	0.9446	0.8720	0.9338	0.9148
			Len	3.2771	3.3339	3.3322	4.8082	3.4344
400	200	0.07	Cov	0.9438	0.9526	0.6926	0.9406	0.8946
			Len	3.2616	3.3477	2.8103	5.0411	3.3874
1000	20	0.2236	Cov	0.9482	0.9520	0.9480	0.9480	0.9480
			Len	3.2450	3.1657	3.2576	3.2576	3.2576
1000	40	0.1581	Cov	0.9356	0.9426	0.9354	0.9354	0.9354
			Len	3.3072	3.1991	3.3184	3.3184	3.3184
1000	100	0.1	Cov	0.9376	0.9494	0.9252	0.9288	0.9250
			Len	3.2376	3.2117	3.3784	4.2447	3.3767
1000	200	0.07	Cov	0.9420	0.9506	0.8988	0.9318	0.9224
			Len	3.1909	3.2164	3.3287	4.6835	3.3722

Table 5.153. Etype = 3, J=20, k=1, $\psi = 0.9$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.9	Cov	0.9644	0.9636	0.9266	0.9610	0.9474
			Len	4.1823	3.8170	3.8274	3.9116	3.9078
100	40	0.9	Cov	0.9666	0.9622	0.8524	0.9656	0.9378
			Len	6.2813	3.8303	3.4626	3.9182	3.8842
100	100	0.9	Cov	0.9664	0.9592	0.6014	0.9652	0.9234
			Len	16.6351	3.8700	2.2084	3.9266	3.8250
100	200	0.9	Cov	0.9662	0.9572	0.3632	0.9644	0.9190
			Len	33.1788	3.9145	1.1149	3.9540	3.7791
400	20	0.9	Cov	0.9478	0.9472	0.9416	0.9416	0.9416
			Len	3.2446	3.2724	3.4105	3.4105	3.4105
400	40	0.9	Cov	0.9534	0.9526	0.9372	0.9504	0.9358
			Len	3.2272	3.2799	3.4397	3.4220	3.4401
400	100	0.9	Cov	0.9544	0.9504	0.8766	0.9494	0.9160
			Len	3.2492	3.3075	3.3275	3.4407	3.4287
400	200	0.9	Cov	0.9546	0.9516	0.7076	0.9518	0.9042
			Len	3.2909	3.3225	2.8113	3.4479	3.3884
1000	20	0.9	Cov	0.9532	0.9530	0.9502	0.9502	0.9502
			Len	3.1170	3.1414	3.2549	3.2549	3.2549
1000	40	0.9	Cov	0.9516	0.9508	0.9422	0.9422	0.9422
			Len	3.1239	3.1561	3.3191	3.3191	3.3191
1000	100	0.9	Cov	0.9468	0.9466	0.9206	0.9380	0.9246
			Len	3.1589	3.1711	3.3791	3.3594	3.3779
1000	200	0.9	Cov	0.9540	0.9552	0.8982	0.9520	0.9190
			Len	3.2039	3.1784	3.3229	3.3667	3.3683

Table 5.154. Etype = 3, J=20, k=19, $\psi = 0$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0	Cov	0.9798	0.9536	0.9592	0.9754	0.9540
			Len	20.5181	15.6455	4.6449	18.8976	17.3240
100	40	0	Cov	0.9810	0.9544	0.8910	0.9796	0.9546
			Len	20.5022	15.6291	4.3567	20.4026	17.2886
100	100	0	Cov	0.9762	0.9422	0.5488	0.9778	0.9474
			Len	20.0419	15.3022	3.6595	20.9538	16.9013
100	200	0	Cov	0.9658	0.9386	0.2490	0.9686	0.9326
			Len	20.0872	15.7833	2.1669	20.7276	16.3862
400	20	0	Cov	0.9744	0.9750	0.9750	0.9750	0.9750
			Len	4.3355	4.3300	4.3300	4.3300	4.3300
400	40	0	Cov	0.9768	0.9758	0.9710	0.9700	0.9762
			Len	5.3821	4.3399	4.3538	13.8034	4.3318
400	100	0	Cov	0.9726	0.9754	0.9320	0.9664	0.9758
			Len	5.9271	4.3375	4.1502	17.6694	4.3281
400	200	0	Cov	0.9780	0.9784	0.7858	0.9790	0.9792
			Len	6.3172	4.3368	3.4518	18.9838	4.3254
1000	20	0	Cov	0.9612	0.9610	0.9610	0.9610	0.9610
			Len	3.5587	3.5516	3.5516	3.5516	3.5516
1000	40	0	Cov	0.9596	0.9600	0.9594	0.9594	0.9594
			Len	3.6177	3.6047	3.6325	3.6325	3.6325
1000	100	0	Cov	0.9530	0.9494	0.9396	0.9366	0.9416
			Len	3.6417	3.6530	3.6831	11.9768	3.6812
1000	200	0	Cov	0.9542	0.9498	0.9100	0.9366	0.9364
			Len	3.7185	3.6764	3.6185	14.8414	3.6824

Table 5.155. Etype = 3, J=20, k=19, $\psi = 1/\sqrt{p}$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.2236	Cov	0.9808	0.9588	0.9558	0.9806	0.9448
			Len	80.7544	18.5012	4.5949	4.8365	25.4635
100	40	0.1581	Cov	0.9804	0.9480	0.9014	0.9768	0.9344
			Len	79.7130	19.9509	4.4166	13.3319	27.3010
100	100	0.1	Cov	0.9832	0.9302	0.6524	0.9780	0.9254
			Len	78.2454	20.9453	4.1682	17.8505	28.7847
100	200	0.07	Cov	0.9818	0.9390	0.3874	0.9804	0.9092
			Len	88.9069	27.3658	3.1461	19.6499	29.2473
400	20	0.2236	Cov	0.9770	0.9750	0.9750	0.9750	0.9750
			Len	4.4446	4.3219	4.3219	4.3219	4.3219
400	40	0.1581	Cov	0.9792	0.9716	0.9682	0.9642	0.9742
			Len	41.6633	5.1623	4.3514	9.2795	4.4112
400	100	0.1	Cov	0.9776	0.9732	0.9300	0.9636	0.9712
			Len	55.1140	7.9854	4.1501	14.6708	4.5877
400	200	0.07	Cov	0.9820	0.9624	0.7848	0.9698	0.9752
			Len	59.8878	10.4482	3.4502	17.0150	4.8688
1000	20	0.2236	Cov	0.9620	0.9602	0.9602	0.9602	0.9602
			Len	3.7048	3.5596	3.5596	3.5596	3.5596
1000	40	0.1581	Cov	0.9630	0.9624	0.9608	0.9608	0.9608
			Len	3.7131	3.5962	3.6317	3.6317	3.6317
1000	100	0.1	Cov	0.9524	0.9502	0.9386	0.9352	0.9420
			Len	3.7185	3.6324	3.6866	10.0281	3.6836
1000	200	0.07	Cov	0.9540	0.9516	0.9086	0.9428	0.9336
			Len	3.7775	3.6516	3.6147	13.3205	3.6774

Table 5.156. Etype = 3, J=20, k=19, $\psi = 0.9$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.9	Cov	0.9882	0.9662	0.9582	0.9814	0.9580
			Len	230.5138	5.6653	4.6041	4.7165	5.6399
100	40	0.9	Cov	0.9862	0.9658	0.9052	0.9824	0.9500
			Len	301.3927	5.6810	4.1164	5.1234	5.5612
100	100	0.9	Cov	0.9838	0.9614	0.6750	0.9800	0.9340
			Len	518.4631	5.5382	2.5907	5.3000	5.4307
100	200	0.9	Cov	0.9838	0.9606	0.4094	0.9772	0.9290
			Len	931.1808	5.4782	1.3341	5.3940	5.3057
400	20	0.9	Cov	0.9746	0.9666	0.9664	0.9664	0.9664
			Len	10.3007	4.5350	3.9571	3.9571	3.9571
400	40	0.9	Cov	0.9658	0.9616	0.9542	0.9644	0.9572
			Len	14.3170	5.0194	3.8902	4.0470	3.9477
400	100	0.9	Cov	0.9678	0.9614	0.9122	0.9648	0.9490
			Len	22.9923	5.0510	3.6877	4.2360	3.9457
400	200	0.9	Cov	0.9628	0.9520	0.7498	0.9540	0.9286
			Len	32.0266	4.9834	3.0841	4.3196	3.9267
1000	20	0.9	Cov	0.9630	0.9606	0.9634	0.9634	0.9634
			Len	9.6983	4.2080	3.5504	3.5504	3.5504
1000	40	0.9	Cov	0.9590	0.9554	0.9522	0.9522	0.9522
			Len	13.5718	4.7993	3.5642	3.5642	3.5642
1000	100	0.9	Cov	0.9614	0.9536	0.9442	0.9520	0.9472
			Len	21.9369	4.9144	3.5977	3.8168	3.5980
1000	200	0.9	Cov	0.9608	0.9530	0.9128	0.9518	0.9334
			Len	30.2929	4.8915	3.5255	3.9654	3.5915

Table 5.157. Etype = 3, J=20, k=p-1, $\psi = 0$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	40	0	Cov	0.9748	0.9302	0.8726	0.9718	0.9430
			Len	28.7973	22.9522	4.4790	28.0329	25.0917
400	40	0	Cov	0.9736	0.9532	0.9688	0.9592	0.9486
			Len	25.6791	17.3084	4.3567	19.0658	18.1278
1000	40	0	Cov	0.9704	0.9688	0.9688	0.9688	0.9688
			Len	4.0540	4.0434	4.0434	4.0434	4.0434
100	100	0	Cov	0.9576	0.8968	0.4878	0.9628	0.9104
			Len	42.0968	34.0909	6.2725	42.6676	37.3366
400	100	0	Cov	0.9720	0.9404	0.9450	0.9650	0.9282
			Len	43.3056	34.3924	4.1456	39.0735	34.8798
1000	100	0	Cov	0.9742	0.9484	0.9718	0.9598	0.9388
			Len	40.2335	27.1522	4.3416	29.4349	27.8204
100	200	0	Cov	0.9582	0.8922	0.2206	0.9614	0.8920
			Len	60.2862	50.1462	5.9030	60.3033	51.7738
400	200	0	Cov	0.9460	0.8852	0.7250	0.9420	0.8698
			Len	53.8445	44.4312	2.9209	51.5346	44.8378
1000	200	0	Cov	0.9770	0.9440	0.9444	0.9622	0.9342
			Len	60.1818	46.9544	4.2433	52.4976	47.1855

Table 5.158. Etype = 3, J=20, k=p-1, $\psi = 1/\sqrt{p}$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	40	0.1581	Cov	0.9810	0.9382	0.9022	0.9814	0.9260
			Len	162.1831	39.4737	4.0988	5.0513	55.2863
100	100	0.1	Cov	0.9834	0.9148	0.6672	0.9766	0.9096
			Len	398.4739	98.2809	2.6254	5.7128	142.2078
100	200	0.07	Cov	0.9792	0.9284	0.4112	0.9792	0.8992
			Len	912.1363	258.7397	1.4618	6.6378	282.1162
400	40	0.1581	Cov	0.9774	0.9650	0.9686	0.9742	0.9334
			Len	130.5280	21.5731	4.3596	4.3862	20.8450
400	100	0.1	Cov	0.9756	0.9442	0.9396	0.9774	0.9144
			Len	354.5971	68.7641	4.1539	4.5738	62.9146
400	200	0.07	Cov	0.9770	0.9436	0.8006	0.9758	0.8874
			Len	709.3075	142.5961	3.4605	4.9155	129.4806
1000	40	0.1581	Cov	0.9740	0.9682	0.9682	0.9682	0.9682
			Len	6.2698	4.0324	4.0324	4.0324	4.0324
1000	100	0.1	Cov	0.9772	0.9644	0.9678	0.9762	0.9294
			Len	264.0273	37.4464	4.3433	4.3802	34.1463
1000	200	0.07	Cov	0.9756	0.9550	0.9442	0.9706	0.9190
			Len	583.7044	92.5322	4.2420	4.5316	79.6843

Table 5.159. Etype = 3, J=20, k=p-1, $\psi = 0.9$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	40	0.9	Cov	0.9832	0.9612	0.8978	0.9808	0.9324
			Len	694.0027	8.0494	4.1011	4.7155	8.1372
400	40	0.9	Cov	0.9802	0.9734	0.9698	0.9784	0.9626
			Len	32.9074	7.6428	4.3445	4.3219	4.9601
1000	40	0.9	Cov	0.9794	0.9720	0.9716	0.9716	0.9716
			Len	31.4758	7.4645	4.0315	4.0315	4.0315
100	100	0.9	Cov	0.9874	0.9534	0.6692	0.9814	0.9066
			Len	3025.6710	16.3995	2.5480	4.7150	17.5771
400	100	0.9	Cov	0.9848	0.9644	0.9382	0.9788	0.9240
			Len	137.2993	15.9028	4.1608	4.3296	8.1336
1000	100	0.9	Cov	0.9846	0.9770	0.9700	0.9780	0.9542
			Len	132.0469	16.2782	4.3435	4.3150	5.7393
100	200	0.9	Cov	0.9860	0.9588	0.4192	0.9788	0.8912
			Len	10591.7900	32.3534	1.2805	4.7283	33.4140
400	200	0.9	Cov	0.9810	0.9648	0.7982	0.9806	0.8880
			Len	509.4511	28.7289	3.4622	4.3285	14.6730
1000	200	0.9	Cov	0.9790	0.9768	0.9488	0.9764	0.9172
			Len	364.7521	29.9700	4.2375	4.3139	9.4939

Table 5.160. Etype = 3, J=50, k=1, $\psi = 0$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0	Cov	0.9624	0.9602	0.9386	0.9602	0.9638
			Len	3.9944	3.8048	4.1532	6.0891	3.7380
100	40	0	Cov	0.9614	0.9568	0.9120	0.9622	0.9614
			Len	4.0635	3.8167	4.0964	6.1446	3.7435
100	100	0	Cov	0.9650	0.9578	0.8504	0.9656	0.9692
			Len	4.1285	3.8177	3.7153	6.1969	3.7442
100	200	0	Cov	0.9592	0.9532	0.7758	0.9608	0.9612
			Len	4.1968	3.8145	3.1906	6.1966	3.7401
400	20	0	Cov	0.9476	0.9494	0.9410	0.9412	0.9462
			Len	3.2873	3.3461	3.4134	4.8534	3.3967
400	40	0	Cov	0.9514	0.9484	0.9314	0.9412	0.9424
			Len	3.2865	3.3750	3.4474	5.1800	3.4227
400	100	0	Cov	0.9440	0.9368	0.8710	0.9398	0.9308
			Len	3.2983	3.4080	3.3279	5.3826	3.4427
400	200	0	Cov	0.9484	0.9394	0.7072	0.9450	0.9316
			Len	3.3079	3.4203	2.8149	5.4615	3.4476
1000	20	0	Cov	0.9442	0.9474	0.9446	0.9446	0.9446
			Len	3.2496	3.2063	3.2584	3.2584	3.2584
1000	40	0	Cov	0.9466	0.9458	0.9410	0.9406	0.9424
			Len	3.2024	3.2551	3.3201	4.5350	3.3126
1000	100	0	Cov	0.9512	0.9480	0.9310	0.9448	0.9404
			Len	3.1813	3.3082	3.3811	5.0626	3.3602
1000	200	0	Cov	0.9488	0.9460	0.8894	0.9420	0.9346
			Len	3.1709	3.3313	3.3249	5.2323	3.3717

Table 5.161. Etype = 3, J=50, k=1, $\psi = 1/\sqrt{p}$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.2236	Cov	0.9674	0.9650	0.9622	0.9616	0.9682
			Len	4.3200	3.8327	5.3951	5.4754	3.7457
100	40	0.1581	Cov	0.9640	0.9582	0.9598	0.9602	0.9630
			Len	4.3323	3.8258	5.6169	5.6879	3.7268
100	100	0.1	Cov	0.9592	0.9586	0.9608	0.9622	0.9654
			Len	4.4333	3.8560	5.8365	5.8983	3.7444
100	200	0.07	Cov	0.9620	0.9564	0.9554	0.9568	0.9642
			Len	4.5215	3.8601	5.9394	6.0002	3.7434
400	20	0.2236	Cov	0.9496	0.9518	0.9430	0.9454	0.9426
			Len	3.2828	3.2824	3.4065	4.4104	3.3897
400	40	0.1581	Cov	0.9538	0.9552	0.9360	0.9504	0.9478
			Len	3.2816	3.2980	3.4459	4.8107	3.4179
400	100	0.1	Cov	0.9502	0.9514	0.8816	0.9480	0.9372
			Len	3.3054	3.3314	3.3274	5.1294	3.4463
400	200	0.07	Cov	0.9460	0.9462	0.7204	0.9446	0.9296
			Len	3.3126	3.3426	2.8288	5.2755	3.4453
1000	20	0.2236	Cov	0.9472	0.9490	0.9470	0.9470	0.9470
			Len	3.2464	3.1684	3.2589	3.2589	3.2589
1000	40	0.1581	Cov	0.9508	0.9528	0.9460	0.9450	0.9468
			Len	3.2020	3.1730	3.3185	4.2709	3.3108
1000	100	0.1	Cov	0.9464	0.9474	0.9288	0.9414	0.9392
			Len	3.1811	3.1880	3.3781	4.8283	3.3567
1000	200	0.07	Cov	0.9446	0.9482	0.8904	0.9410	0.9322
			Len	3.1721	3.1981	3.3247	5.0570	3.3711

Table 5.162. Etype = 3, J=50, k=1, $\psi = 0.9$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.9	Cov	0.9626	0.9590	0.9626	0.9626	0.9590
			Len	10.9414	3.7808	3.8323	3.8323	3.7985
100	40	0.9	Cov	0.9634	0.9626	0.9654	0.9654	0.9638
			Len	16.4666	3.7920	3.8418	3.8418	3.8058
100	100	0.9	Cov	0.9680	0.9608	0.9650	0.9650	0.9630
			Len	27.1510	3.8277	3.8333	3.8333	3.7936
100	200	0.9	Cov	0.9642	0.9548	0.9638	0.9638	0.9596
			Len	46.3657	3.8531	3.8387	3.8387	3.7939
400	20	0.9	Cov	0.9502	0.9486	0.9422	0.9492	0.9422
			Len	3.2605	3.2743	3.4101	3.3706	3.3958
400	40	0.9	Cov	0.9512	0.9510	0.9314	0.9510	0.9418
			Len	3.4655	3.2881	3.4455	3.3820	3.4289
400	100	0.9	Cov	0.9522	0.9512	0.8770	0.9530	0.9364
			Len	4.6748	3.3082	3.3300	3.3912	3.4523
400	200	0.9	Cov	0.9516	0.9450	0.7190	0.9486	0.9222
			Len	7.7790	3.3177	2.8191	3.3909	3.4567
1000	20	0.9	Cov	0.9538	0.9528	0.9510	0.9510	0.9510
			Len	3.1219	3.1452	3.2583	3.2583	3.2583
1000	40	0.9	Cov	0.9512	0.9504	0.9420	0.9480	0.9408
			Len	3.1219	3.1543	3.3182	3.2879	3.3102
1000	100	0.9	Cov	0.9494	0.9474	0.9302	0.9458	0.9370
			Len	3.1593	3.1692	3.3769	3.3095	3.3576
1000	200	0.9	Cov	0.9540	0.9508	0.8954	0.9512	0.9362
			Len	3.2081	3.1826	3.3277	3.3192	3.3751

Table 5.163. Etype = 3, J=50, k=19, $\psi = 0$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0	Cov	0.9568	0.9254	0.9322	0.9612	0.9502
			Len	18.0945	14.2843	7.4280	18.9841	18.3152
100	40	0	Cov	0.9626	0.9278	0.8946	0.9672	0.9580
			Len	18.0581	14.2584	8.5690	19.3488	18.3198
100	100	0	Cov	0.9534	0.9136	0.8184	0.9584	0.9508
			Len	18.0820	14.2339	9.1398	19.6271	18.3224
100	200	0	Cov	0.9678	0.9460	0.7438	0.9684	0.9606
			Len	19.0913	16.1341	8.5696	19.6777	18.2836
400	20	0	Cov	0.9548	0.9390	0.9542	0.9422	0.9384
			Len	16.9204	11.3395	3.6648	14.2100	13.7638
400	40	0	Cov	0.9550	0.9358	0.9446	0.9510	0.9332
			Len	16.8844	11.3228	3.7000	16.3942	13.7577
400	100	0	Cov	0.9568	0.9416	0.8952	0.9558	0.9398
			Len	16.8874	11.2838	3.5654	17.6544	13.7700
400	200	0	Cov	0.9542	0.9418	0.7514	0.9552	0.9368
			Len	16.8928	11.2742	3.0564	18.1475	13.7715
1000	20	0	Cov	0.9618	0.9620	0.9620	0.9620	0.9620
			Len	3.5654	3.5587	3.5587	3.5587	3.5587
1000	40	0	Cov	0.9684	0.9638	0.9618	0.9502	0.9654
			Len	4.0219	3.5686	3.6227	12.7115	3.5575
1000	100	0	Cov	0.9590	0.9602	0.9456	0.9482	0.9624
			Len	4.2084	3.5768	3.6801	16.1112	3.5598
1000	200	0	Cov	0.9598	0.9606	0.9170	0.9562	0.9620
			Len	4.3099	3.5756	3.6105	17.2043	3.5552

Table 5.164. Etype = 3, J=50, k=19, $\psi = 1/\sqrt{p}$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.2236	Cov	0.9648	0.9216	0.9650	0.9646	0.9364
			Len	70.0260	16.0576	3.9333	3.9585	46.7489
100	40	0.1581	Cov	0.9604	0.9084	0.9662	0.9670	0.9316
			Len	69.0525	17.3747	12.2804	12.5084	48.8759
100	100	0.1	Cov	0.9596	0.8822	0.9634	0.9648	0.9320
			Len	67.5682	18.1072	16.0544	16.2718	50.1554
100	200	0.07	Cov	0.9626	0.8858	0.9656	0.9662	0.9288
			Len	78.0310	25.2198	17.4941	17.7004	50.2342
400	20	0.2236	Cov	0.9588	0.9524	0.9616	0.9628	0.9310
			Len	65.8737	10.5683	3.6687	3.6172	16.5396
400	40	0.1581	Cov	0.9600	0.9476	0.9422	0.9548	0.9262
			Len	64.8400	11.3780	3.7012	10.6168	17.8030
400	100	0.1	Cov	0.9580	0.9474	0.8962	0.9548	0.9276
			Len	63.4644	12.3146	3.5616	14.6268	18.9488
400	200	0.07	Cov	0.9568	0.9372	0.7402	0.9592	0.9268
			Len	61.9664	12.8776	3.0998	16.2209	19.6442
1000	20	0.2236	Cov	0.9660	0.9630	0.9630	0.9630	0.9630
			Len	3.7035	3.5576	3.5576	3.5576	3.5576
1000	40	0.1581	Cov	0.9626	0.9566	0.9546	0.9436	0.9568
			Len	18.3475	3.5911	3.6191	8.4917	3.5561
1000	100	0.1	Cov	0.9634	0.9560	0.9372	0.9500	0.9562
			Len	31.4030	3.7841	3.6748	13.3632	3.5626
1000	200	0.07	Cov	0.9666	0.9596	0.9176	0.9538	0.9630
			Len	40.4800	4.2393	3.6119	15.3912	3.5693

Table 5.165. Etype = 3, J=50, k=19, $\psi = 0.9$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.9	Cov	0.9706	0.9388	0.9650	0.9650	0.9366
			Len	230.6223	5.0067	3.7450	3.7450	8.1529
100	40	0.9	Cov	0.9642	0.9400	0.9662	0.9662	0.9270
			Len	329.9553	4.9791	4.2715	4.2715	8.0814
100	100	0.9	Cov	0.9694	0.9292	0.9618	0.9618	0.9308
			Len	523.5096	4.7851	4.4544	4.4544	7.9819
100	200	0.9	Cov	0.9680	0.9298	0.9610	0.9610	0.9178
			Len	893.6305	4.7265	4.5118	4.5118	7.8609
400	20	0.9	Cov	0.9636	0.9572	0.9576	0.9646	0.9496
			Len	96.2901	4.3825	3.6590	3.5715	4.3506
400	40	0.9	Cov	0.9594	0.9518	0.9424	0.9584	0.9414
			Len	69.2012	4.7417	3.6920	3.9697	4.3524
400	100	0.9	Cov	0.9588	0.9498	0.8956	0.9576	0.9414
			Len	124.7301	4.8335	3.5631	4.1959	4.3771
400	200	0.9	Cov	0.9614	0.9508	0.7554	0.9598	0.9378
			Len	215.4489	4.7771	3.0108	4.2744	4.3809
1000	20	0.9	Cov	0.9664	0.9598	0.9602	0.9602	0.9602
			Len	9.6969	4.1974	3.5466	3.5466	3.5466
1000	40	0.9	Cov	0.9582	0.9586	0.9592	0.9614	0.9592
			Len	13.5855	4.8134	3.5632	3.7576	3.5731
1000	100	0.9	Cov	0.9624	0.9560	0.9394	0.9592	0.9514
			Len	21.9236	4.9075	3.5995	4.0062	3.6186
1000	200	0.9	Cov	0.9606	0.9528	0.9108	0.9584	0.9504
			Len	30.2919	4.9066	3.5292	4.1001	3.6562

Table 5.166. Etype = 3, J=50, k=p-1, $\psi = 0$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	40	0	Cov	0.9584	0.9106	0.8906	0.9646	0.9508
			Len	25.9217	21.2087	11.6953	27.3291	26.2453
400	40	0	Cov	0.9554	0.9288	0.9424	0.9502	0.9292
			Len	24.7895	19.5493	3.7066	23.0648	21.8866
1000	40	0	Cov	0.9580	0.9430	0.9576	0.9438	0.9420
			Len	23.7430	15.2729	3.6203	17.6395	17.2337
100	100	0	Cov	0.9500	0.8800	0.8100	0.9582	0.9376
			Len	41.2669	34.0048	19.7201	43.8646	41.9770
400	100	0	Cov	0.9542	0.9170	0.8954	0.9554	0.9360
			Len	40.0461	34.1398	3.5688	39.3103	36.8825
1000	100	0	Cov	0.9576	0.9332	0.9496	0.9526	0.9314
			Len	39.4560	32.0500	3.6792	35.7837	33.7183
400	200	0	Cov	0.9462	0.9108	0.6976	0.9472	0.9226
			Len	55.1043	47.9555	3.3893	55.1655	51.5128
1000	200	0	Cov	0.9622	0.9306	0.9176	0.9552	0.9280
			Len	56.7019	48.7998	3.6097	54.1929	50.5728

Table 5.167. Etype = 3, J=50, k=p-1, $\psi = 1/\sqrt{p}$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	40	0.1581	Cov	0.9642	0.9006	0.9658	0.9662	0.9400
			Len	140.3552	34.2855	4.1832	4.2165	99.0408
100	100	0.1	Cov	0.9584	0.8626	0.9618	0.9632	0.9218
			Len	345.5432	85.3149	4.8078	4.8526	254.1073
100	200	0.07	Cov	0.9640	0.8790	0.9580	0.9588	0.9194
			Len	799.7382	236.6724	5.6739	5.7304	506.2869
400	40	0.1581	Cov	0.9588	0.9376	0.9476	0.9606	0.9162
			Len	131.8074	24.5767	3.6941	3.6915	38.8234
400	100	0.1	Cov	0.9554	0.9284	0.8930	0.9616	0.9094
			Len	324.7592	65.1255	3.5620	3.9346	105.7167
400	200	0.07	Cov	0.9584	0.9152	0.7336	0.9606	0.8996
			Len	636.9782	130.6055	3.0075	4.2697	215.5844
1000	40	0.1581	Cov	0.9640	0.9520	0.9582	0.9596	0.9346
			Len	128.9778	18.0767	3.6194	3.5833	20.0816
1000	100	0.1	Cov	0.9550	0.9414	0.9488	0.9618	0.9164
			Len	320.4386	52.9085	3.6781	3.7016	63.0990
1000	200	0.07	Cov	0.9582	0.9364	0.9136	0.9594	0.9086
			Len	625.8618	107.7568	3.6102	3.8816	133.2308

Table 5.168. Etype = 3, J=50, k=p-1, $\psi = 0.9$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	40	0.9	Cov	0.9660	0.9296	0.9608	0.9608	0.9328
			Len	675.2869	7.2529	3.7490	3.7490	15.0066
400	40	0.9	Cov	0.9676	0.9480	0.9472	0.9624	0.9248
			Len	295.8083	6.6366	3.6964	3.5787	6.0805
1000	40	0.9	Cov	0.9594	0.9532	0.9566	0.9580	0.9478
			Len	28.9976	6.8519	3.6209	3.5550	4.4977
100	100	0.9	Cov	0.9684	0.9194	0.9658	0.9658	0.9214
			Len	2723.3590	14.6029	3.7405	3.7405	36.3488
400	100	0.9	Cov	0.9642	0.9522	0.8908	0.9616	0.9048
			Len	1849.4080	13.7998	3.5630	3.5818	12.8216
1000	100	0.9	Cov	0.9648	0.9504	0.9400	0.9596	0.9210
			Len	122.0355	14.1967	3.6803	3.5590	8.0451
100	200	0.9	Cov	0.9672	0.9192	0.9640	0.9640	0.9152
			Len	9360.4090	28.6047	3.7406	3.7406	71.3896
400	200	0.9	Cov	0.9626	0.9390	0.7484	0.9638	0.8986
			Len	6157.3260	25.8033	3.0048	3.5753	24.7109
1000	200	0.9	Cov	0.9618	0.9456	0.9212	0.9656	0.9040
			Len	425.1361	26.2287	3.6143	3.5604	15.0387

Table 5.169. Etype = 4, J=5, k=1, $\psi = 0$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0	Cov	0.9106	0.9526	0.9082	0.9082	0.9082
			Len	2.1562	2.2071	2.1607	2.1607	2.1607
100	40	0	Cov	0.9114	0.9290	0.7950	0.9062	0.8250
			Len	2.0180	2.1664	1.9488	3.1987	1.9996
100	100	0	Cov	0.8974	0.8792	0.1266	0.9192	0.6812
			Len	1.9524	2.0690	0.5571	3.8545	1.6775
100	200	0	Cov	0.9034	0.8564	0.0012	0.9270	0.5932
			Len	1.9478	1.9952	0.0019	4.1324	1.4311
400	20	0	Cov	0.9442	0.9588	0.9424	0.9424	0.9424
			Len	1.9691	1.9688	1.9734	1.9734	1.9734
400	40	0	Cov	0.9098	0.9366	0.9088	0.9088	0.9088
			Len	1.9649	1.9730	1.9695	1.9695	1.9695
400	100	0	Cov	0.8546	0.9004	0.8310	0.8504	0.8326
			Len	1.8638	1.9631	1.8889	2.2831	1.8894
400	200	0	Cov	0.8346	0.8590	0.6560	0.8676	0.7232
			Len	1.7607	1.9194	1.6074	3.0175	1.7068
1000	20	0	Cov	0.9474	0.9542	0.9476	0.9476	0.9476
			Len	1.9206	1.9206	1.9236	1.9236	1.9236
1000	40	0	Cov	0.9352	0.9452	0.9350	0.9350	0.9350
			Len	1.9256	1.9240	1.9298	1.9298	1.9298
1000	100	0	Cov	0.9038	0.9252	0.9042	0.9042	0.9042
			Len	1.9244	1.9319	1.9291	1.9291	1.9291
1000	200	0	Cov	0.8458	0.8968	0.8464	0.8464	0.8464
			Len	1.8816	1.9287	1.8857	1.8857	1.8857

Table 5.170. Etype = 4, J=5, k=1, $\psi = 1/\sqrt{p}$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.2236	Cov	0.9228	0.9782	0.9192	0.9192	0.9192
			Len	2.1508	2.2138	2.1574	2.1574	2.1574
100	40	0.1581	Cov	0.9078	0.9714	0.7932	0.9016	0.8226
			Len	2.0208	2.2145	1.9469	2.9513	1.9988
100	100	0.1	Cov	0.8944	0.9620	0.1524	0.9142	0.6824
			Len	1.9581	2.2073	0.5784	3.6156	1.6795
100	200	0.07	Cov	0.9014	0.9544	0.0010	0.9272	0.5820
			Len	1.9579	2.2068	0.0027	3.9464	1.4401
400	20	0.2236	Cov	0.9380	0.9568	0.9366	0.9366	0.9366
			Len	1.9676	1.9655	1.9738	1.9738	1.9738
400	40	0.1581	Cov	0.9154	0.9566	0.9128	0.9128	0.9128
			Len	1.9614	1.9690	1.9707	1.9707	1.9707
400	100	0.1	Cov	0.8466	0.9368	0.8254	0.8562	0.8260
			Len	1.8638	1.9742	1.8882	2.2235	1.8892
400	200	0.07	Cov	0.8458	0.9402	0.6526	0.8758	0.7280
			Len	1.7607	1.9736	1.6048	2.9007	1.7055
1000	20	0.2236	Cov	0.9452	0.9536	0.9470	0.9470	0.9470
			Len	1.9195	1.9195	1.9239	1.9239	1.9239
1000	40	0.1581	Cov	0.9346	0.9538	0.9328	0.9328	0.9328
			Len	1.9246	1.9203	1.9304	1.9304	1.9304
1000	100	0.1	Cov	0.9056	0.9472	0.9046	0.9046	0.9046
			Len	1.9225	1.9251	1.9289	1.9289	1.9289
1000	200	0.07	Cov	0.8460	0.9250	0.8436	0.8436	0.8436
			Len	1.8797	1.9316	1.8855	1.8855	1.8855

Table 5.171. Etype = 4, J=5, k=1, $\psi = 0.9$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.9	Cov	0.9868	0.9840	0.9148	0.9148	0.9148
			Len	2.1991	2.2052	2.1539	2.1539	2.1539
100	40	0.9	Cov	0.9900	0.9772	0.7950	0.9318	0.8228
			Len	2.2013	2.2089	1.9431	2.1707	1.9925
100	100	0.9	Cov	0.9916	0.9778	0.1466	0.9526	0.6826
			Len	2.2226	2.2069	0.5597	2.1802	1.6719
100	200	0.9	Cov	0.9858	0.9676	0.0004	0.9574	0.5772
			Len	2.3143	2.2061	0.0021	2.1870	1.4232
400	20	0.9	Cov	0.9670	0.9616	0.9368	0.9368	0.9368
			Len	1.9642	1.9640	1.9729	1.9729	1.9729
400	40	0.9	Cov	0.9668	0.9608	0.9146	0.9146	0.9146
			Len	1.9689	1.9647	1.9687	1.9687	1.9687
400	100	0.9	Cov	0.9686	0.9606	0.8350	0.8728	0.8366
			Len	1.9853	1.9657	1.8878	1.9288	1.8889
400	200	0.9	Cov	0.9642	0.9588	0.6560	0.8864	0.7208
			Len	2.0083	1.9668	1.6053	1.9407	1.7056
1000	20	0.9	Cov	0.9596	0.9576	0.9454	0.9454	0.9454
			Len	1.9221	1.9193	1.9239	1.9239	1.9239
1000	40	0.9	Cov	0.9598	0.9560	0.9308	0.9308	0.9308
			Len	1.9268	1.9195	1.9303	1.9303	1.9303
1000	100	0.9	Cov	0.9538	0.9514	0.9066	0.9066	0.9066
			Len	1.9406	1.9199	1.9286	1.9286	1.9286
1000	200	0.9	Cov	0.9532	0.9428	0.8514	0.8514	0.8514
			Len	1.9645	1.9201	1.8855	1.8855	1.8855

Table 5.172. Etype = 4, J=5, k=19, $\psi = 0$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0	Cov	0.9918	0.9912	0.9912	0.9912	0.9912
			Len	2.9735	2.9663	2.9663	2.9663	2.9663
100	40	0	Cov	0.9804	0.9860	0.9274	0.9622	0.9888
			Len	10.7320	3.6221	2.7125	14.3093	3.3131
100	100	0	Cov	0.9834	0.9718	0.2052	0.9768	0.9772
			Len	14.8601	6.4804	0.9336	19.4698	4.3356
100	200	0	Cov	0.9770	0.9524	0.0016	0.9808	0.9444
			Len	16.7004	9.1315	0.0075	21.1657	5.5755
400	20	0	Cov	0.9838	0.9834	0.9834	0.9834	0.9834
			Len	2.2302	2.2223	2.2223	2.2223	2.2223
400	40	0	Cov	0.9754	0.9804	0.9714	0.9714	0.9714
			Len	2.2371	2.2412	2.2493	2.2493	2.2493
400	100	0	Cov	0.9334	0.9456	0.9084	0.8890	0.9112
			Len	2.1648	2.2460	2.1973	6.4029	2.1987
400	200	0	Cov	0.9270	0.9274	0.7442	0.9060	0.8254
			Len	2.1390	2.2172	1.9042	11.9135	2.0356
1000	20	0	Cov	0.9728	0.9734	0.9734	0.9734	0.9734
			Len	2.0126	2.0060	2.0060	2.0060	2.0060
1000	40	0	Cov	0.9610	0.9628	0.9570	0.9570	0.9570
			Len	2.0132	2.0138	2.0198	2.0198	2.0198
1000	100	0	Cov	0.9256	0.9474	0.9212	0.9212	0.9212
			Len	2.0123	2.0268	2.0302	2.0302	2.0302
1000	200	0	Cov	0.8850	0.9292	0.8788	0.8788	0.8788
			Len	1.9778	2.0294	1.9960	1.9960	1.9960

Table 5.173. Etype = 4, J=5, k=19, $\psi = 1/\sqrt{p}$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.2236	Cov	0.9916	0.9906	0.9906	0.9906	0.9906
			Len	4.1799	2.9670	2.9670	2.9670	2.9670
100	40	0.1581	Cov	0.9914	0.9714	0.9318	0.9696	0.9770
			Len	46.0972	8.1099	2.7131	9.1500	4.7542
100	100	0.1	Cov	0.9904	0.9432	0.2308	0.9776	0.9398
			Len	58.0956	13.5807	0.9369	16.0378	7.5798
100	200	0.07	Cov	0.9924	0.9194	0.0008	0.9812	0.8762
			Len	64.6805	16.3557	0.0104	19.1009	9.4730
400	20	0.2236	Cov	0.9804	0.9848	0.9848	0.9848	0.9848
			Len	3.0769	2.2216	2.2216	2.2216	2.2216
400	40	0.1581	Cov	0.9794	0.9800	0.9714	0.9714	0.9714
			Len	3.0104	2.2395	2.2505	2.2505	2.2505
400	100	0.1	Cov	0.9744	0.9654	0.9116	0.8840	0.9098
			Len	2.9427	2.2495	2.1990	5.3969	2.2003
400	200	0.07	Cov	0.9714	0.9558	0.7418	0.9166	0.8292
			Len	2.8713	2.2527	1.9078	10.6707	2.0386
1000	20	0.2236	Cov	0.9594	0.9666	0.9666	0.9666	0.9666
			Len	2.7192	2.0062	2.0062	2.0062	2.0062
1000	40	0.1581	Cov	0.9586	0.9604	0.9538	0.9538	0.9538
			Len	2.6565	2.0122	2.0196	2.0196	2.0196
1000	100	0.1	Cov	0.9598	0.9588	0.9306	0.9306	0.9306
			Len	2.5730	2.0197	2.0301	2.0301	2.0301
1000	200	0.07	Cov	0.9604	0.9482	0.8788	0.8788	0.8788
			Len	2.4943	2.0239	1.9944	1.9944	1.9944

Table 5.174. Etype = 4, J=5, k=19, $\psi = 0.9$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.9	Cov	0.9924	0.9802	0.9798	0.9798	0.9798
			Len	13.2013	3.5656	2.7169	2.7169	2.7169
100	40	0.9	Cov	0.9894	0.9770	0.8850	0.9770	0.9170
			Len	18.3335	4.1014	2.3903	2.7924	2.5406
100	100	0.9	Cov	0.9888	0.9684	0.1696	0.9770	0.7970
			Len	29.0128	4.1275	0.6937	3.0533	2.3012
100	200	0.9	Cov	0.9896	0.9644	0.0010	0.9786	0.7056
			Len	43.7858	3.8213	0.0027	3.1783	2.0775
400	20	0.9	Cov	0.9804	0.9736	0.9830	0.9830	0.9830
			Len	11.0222	3.0735	2.2226	2.2226	2.2226
400	40	0.9	Cov	0.9788	0.9724	0.9694	0.9694	0.9694
			Len	15.7686	3.8606	2.2168	2.2168	2.2168
400	100	0.9	Cov	0.9768	0.9670	0.8920	0.9238	0.8938
			Len	24.6854	3.9706	2.1371	2.2493	2.1387
400	200	0.9	Cov	0.9808	0.9692	0.7226	0.9294	0.7956
			Len	33.6717	3.8919	1.8333	2.4613	1.9632
1000	20	0.9	Cov	0.9656	0.9544	0.9678	0.9678	0.9678
			Len	9.7087	2.7306	2.0056	2.0056	2.0056
1000	40	0.9	Cov	0.9620	0.9620	0.9562	0.9562	0.9562
			Len	14.0989	3.5390	2.0190	2.0190	2.0190
1000	100	0.9	Cov	0.9640	0.9632	0.9276	0.9276	0.9276
			Len	22.3844	3.7271	2.0295	2.0295	2.0295
1000	200	0.9	Cov	0.9704	0.9568	0.8750	0.8750	0.8750
			Len	30.7072	3.7368	1.9946	1.9946	1.9946

Table 5.175. Etype = 4, J=5, k=p-1, $\psi = 0$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	40	0	Cov	0.9818	0.9386	0.9266	0.9636	0.9056
			Len	26.7237	17.7299	2.7036	20.1015	16.9753
400	40	0	Cov	0.9850	0.9854	0.9854	0.9854	0.9854
			Len	2.4245	2.4102	2.4102	2.4102	2.4102
1000	40	0	Cov	0.9774	0.9772	0.9772	0.9772	0.9772
			Len	2.1424	2.1266	2.1266	2.1266	2.1266
100	100	0	Cov	0.9264	0.7932	0.1418	0.9188	0.7040
			Len	34.8955	24.4500	0.9745	32.5132	22.1249
400	100	0	Cov	0.9780	0.9460	0.9714	0.9366	0.9132
			Len	33.1227	17.9061	2.6979	16.8337	17.4085
1000	100	0	Cov	0.9832	0.9836	0.9836	0.9836	0.9836
			Len	2.4224	2.3854	2.3854	2.3854	2.3854
100	200	0	Cov	0.9238	0.7442	0.0010	0.9226	0.5892
			Len	49.8576	34.8051	0.0169	48.9723	28.9765
400	200	0	Cov	0.8928	0.7846	0.6790	0.8622	0.7080
			Len	40.8303	28.1871	1.6704	32.8659	25.6120
1000	200	0	Cov	0.9838	0.9836	0.9836	0.9836	0.9836
			Len	2.7869	2.7135	2.7135	2.7135	2.7135

Table 5.176. Etype = 4, J=5, k=p-1, $\psi = 1/\sqrt{p}$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	40	0.1581	Cov	0.9918	0.9482	0.9322	0.9936	0.8960
			Len	112.8022	23.4280	2.7168	3.1507	19.1970
100	100	0.1	Cov	0.9910	0.9250	0.1976	0.9880	0.8006
			Len	330.8742	71.3678	0.7993	3.9301	50.1268
100	200	0.07	Cov	0.9902	0.9056	0.0020	0.9866	0.7232
			Len	711.0404	151.1371	0.0037	5.1916	92.7812
400	40	0.1581	Cov	0.9820	0.9848	0.9848	0.9848	0.9848
			Len	6.9122	2.4096	2.4096	2.4096	2.4096
400	100	0.1	Cov	0.9902	0.9596	0.9710	0.9878	0.9136
			Len	119.7442	20.3280	2.7043	2.7877	17.4846
400	200	0.07	Cov	0.9858	0.9328	0.8400	0.9840	0.8280
			Len	346.6200	67.3994	2.3387	3.1328	48.0680
1000	40	0.1581	Cov	0.9724	0.9776	0.9776	0.9776	0.9776
			Len	6.0444	2.1262	2.1262	2.1262	2.1262
1000	100	0.1	Cov	0.9818	0.9854	0.9854	0.9854	0.9854
			Len	17.1702	2.3852	2.3852	2.3852	2.3852
1000	200	0.07	Cov	0.9916	0.9846	0.9846	0.9846	0.9846
			Len	36.4373	2.7143	2.7143	2.7143	2.7143

Table 5.177. Etype = 4, J=5, k=p-1, $\psi = 0.9$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	40	0.9	Cov	0.9966	0.9844	0.9198	0.9952	0.9232
			Len	41.9408	7.5936	2.6906	2.9343	3.3564
400	40	0.9	Cov	0.9854	0.9808	0.9846	0.9846	0.9846
			Len	35.1383	6.9596	2.4109	2.4109	2.4109
1000	40	0.9	Cov	0.9758	0.9698	0.9794	0.9794	0.9794
			Len	31.4192	6.3693	2.1260	2.1260	2.1260
100	100	0.9	Cov	0.9960	0.9824	0.2046	0.9996	0.8122
			Len	182.9307	18.0895	0.8010	2.9605	6.0123
400	100	0.9	Cov	0.9940	0.9920	0.9708	0.9880	0.9422
			Len	162.6525	18.8913	2.6998	2.7386	3.1723
1000	100	0.9	Cov	0.9902	0.9836	0.9826	0.9826	0.9826
			Len	141.7133	16.8814	2.3844	2.3844	2.3844
100	200	0.9	Cov	0.9954	0.9714	0.0010	0.9990	0.7258
			Len	866.8701	31.3938	0.0029	2.9631	10.3606
400	200	0.9	Cov	0.9970	0.9912	0.8494	0.9960	0.8462
			Len	449.9084	35.3552	2.3401	2.7385	5.6165
1000	200	0.9	Cov	0.9962	0.9924	0.9838	0.9838	0.9838
			Len	448.6430	36.4521	2.7150	2.7150	2.7150

Table 5.178. Etype = 4, J=10, k=1, $\psi = 0$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0	Cov	0.9588	0.9628	0.9098	0.9352	0.9236
			Len	2.1432	2.2080	2.1581	3.5526	2.1731
100	40	0	Cov	0.9584	0.9432	0.7990	0.9394	0.8898
			Len	2.1255	2.1873	1.9489	4.1287	2.1071
100	100	0	Cov	0.9584	0.9198	0.2844	0.9512	0.8282
			Len	2.1239	2.1490	0.8452	4.4931	1.9884
100	200	0	Cov	0.9570	0.9140	0.0350	0.9436	0.7902
			Len	2.1486	2.1201	0.0959	4.6376	1.8915
400	20	0	Cov	0.9392	0.9542	0.9394	0.9394	0.9394
			Len	1.9701	1.9696	1.9742	1.9742	1.9742
400	40	0	Cov	0.9158	0.9364	0.9170	0.9170	0.9170
			Len	1.9657	1.9739	1.9704	1.9704	1.9704
400	100	0	Cov	0.9116	0.9084	0.8386	0.9074	0.8604
			Len	1.8806	1.9680	1.8873	3.3261	1.9151
400	200	0	Cov	0.8978	0.8832	0.6646	0.9064	0.8076
			Len	1.8525	1.9469	1.6057	3.7463	1.8329
1000	20	0	Cov	0.9478	0.9488	0.9466	0.9466	0.9466
			Len	1.9209	1.9208	1.9240	1.9240	1.9240
1000	40	0	Cov	0.9402	0.9438	0.9386	0.9386	0.9386
			Len	1.9254	1.9241	1.9295	1.9295	1.9295
1000	100	0	Cov	0.8982	0.9236	0.8976	0.8976	0.8976
			Len	1.9243	1.9317	1.9292	1.9292	1.9292
1000	200	0	Cov	0.8980	0.9094	0.8536	0.8932	0.8610
			Len	1.8519	1.9307	1.8856	3.0480	1.8950

Table 5.179. Etype = 4, J=10, k=1, $\psi = 1/\sqrt{p}$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.2236	Cov	0.9592	0.9808	0.9122	0.9340	0.9268
			Len	2.1460	2.2117	2.1591	3.1252	2.1738
100	40	0.1581	Cov	0.9562	0.9708	0.7912	0.9384	0.8814
			Len	2.1295	2.2137	1.9459	3.7227	2.1069
100	100	0.1	Cov	0.9630	0.9694	0.3022	0.9478	0.8304
			Len	2.1322	2.2111	0.8944	4.1811	1.9952
100	200	0.07	Cov	0.9574	0.9590	0.0512	0.9510	0.7904
			Len	2.1545	2.2062	0.1359	4.4158	1.9020
400	20	0.2236	Cov	0.9432	0.9602	0.9424	0.9424	0.9424
			Len	1.9670	1.9657	1.9732	1.9732	1.9732
400	40	0.1581	Cov	0.9138	0.9528	0.9102	0.9102	0.9102
			Len	1.9634	1.9686	1.9701	1.9701	1.9701
400	100	0.1	Cov	0.9012	0.9470	0.8318	0.9052	0.8596
			Len	1.8821	1.9688	1.8885	3.1293	1.9147
400	200	0.07	Cov	0.9050	0.9514	0.6462	0.9184	0.8086
			Len	1.8546	1.9699	1.6063	3.5698	1.8339
1000	20	0.2236	Cov	0.9528	0.9580	0.9494	0.9494	0.9494
			Len	1.9193	1.9192	1.9239	1.9239	1.9239
1000	40	0.1581	Cov	0.9328	0.9480	0.9306	0.9306	0.9306
			Len	1.9244	1.9205	1.9302	1.9302	1.9302
1000	100	0.1	Cov	0.9098	0.9458	0.9080	0.9080	0.9080
			Len	1.9234	1.9253	1.9299	1.9299	1.9299
1000	200	0.07	Cov	0.8984	0.9464	0.8548	0.8976	0.8612
			Len	1.8523	1.9242	1.8860	2.9291	1.8952

Table 5.180. Etype = 4, J=10, k=1, $\psi = 0.9$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.9	Cov	0.9912	0.9846	0.9108	0.9660	0.9250
			Len	2.1997	2.2049	2.1533	2.2281	2.1697
100	40	0.9	Cov	0.9900	0.9828	0.7882	0.9706	0.8864
			Len	2.2180	2.2051	1.9405	2.2417	2.1012
100	100	0.9	Cov	0.9920	0.9746	0.2946	0.9780	0.8280
			Len	2.7138	2.2084	0.8364	2.2534	1.9837
100	200	0.9	Cov	0.9854	0.9686	0.0488	0.9754	0.7730
			Len	4.4309	2.2062	0.1005	2.2554	1.8761
400	20	0.9	Cov	0.9656	0.9620	0.9396	0.9396	0.9396
			Len	1.9636	1.9632	1.9728	1.9728	1.9728
400	40	0.9	Cov	0.9720	0.9626	0.9166	0.9166	0.9166
			Len	1.9701	1.9648	1.9700	1.9700	1.9700
400	100	0.9	Cov	0.9666	0.9606	0.8302	0.9242	0.8522
			Len	1.9841	1.9660	1.8876	1.9921	1.9138
400	200	0.9	Cov	0.9628	0.9534	0.6566	0.9344	0.8074
			Len	2.0087	1.9668	1.6067	2.0028	1.8346
1000	20	0.9	Cov	0.9546	0.9516	0.9410	0.9410	0.9410
			Len	1.9223	1.9193	1.9239	1.9239	1.9239
1000	40	0.9	Cov	0.9580	0.9534	0.9344	0.9344	0.9344
			Len	1.9269	1.9195	1.9298	1.9298	1.9298
1000	100	0.9	Cov	0.9562	0.9576	0.9012	0.9012	0.9012
			Len	1.9406	1.9197	1.9291	1.9291	1.9291
1000	200	0.9	Cov	0.9608	0.9558	0.8450	0.9180	0.8632
			Len	1.9645	1.9203	1.8853	1.9471	1.8948

Table 5.181. Etype = 4, J=10, k=19, $\psi = 0$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0	Cov	0.9864	0.9596	0.9748	0.9734	0.9462
			Len	19.1951	12.7161	2.5897	14.4322	13.2943
100	40	0	Cov	0.9792	0.9528	0.8790	0.9726	0.9430
			Len	19.2609	12.8101	2.3722	18.2546	13.2913
100	100	0	Cov	0.9784	0.9498	0.3426	0.9818	0.9360
			Len	19.2995	13.0513	1.5369	20.4599	13.2503
100	200	0	Cov	0.9748	0.9408	0.0382	0.9764	0.9182
			Len	19.1191	13.2604	0.3203	20.7168	12.8094
400	20	0	Cov	0.9856	0.9852	0.9852	0.9852	0.9852
			Len	2.2302	2.2218	2.2218	2.2218	2.2218
400	40	0	Cov	0.9712	0.9742	0.9680	0.9680	0.9680
			Len	2.2375	2.2413	2.2500	2.2500	2.2500
400	100	0	Cov	0.9636	0.9604	0.9050	0.9428	0.9316
			Len	2.3196	2.2510	2.1984	13.5052	2.2333
400	200	0	Cov	0.9636	0.9554	0.7496	0.9478	0.9162
			Len	2.4376	2.2479	1.9030	16.2156	2.1978
1000	20	0	Cov	0.9672	0.9646	0.9646	0.9646	0.9646
			Len	2.0128	2.0057	2.0057	2.0057	2.0057
1000	40	0	Cov	0.9554	0.9598	0.9534	0.9534	0.9534
			Len	2.0137	2.0144	2.0202	2.0202	2.0202
1000	100	0	Cov	0.9364	0.9488	0.9294	0.9294	0.9294
			Len	2.0120	2.0268	2.0299	2.0299	2.0299
1000	200	0	Cov	0.9176	0.9300	0.8776	0.9090	0.8882
			Len	1.9743	2.0299	1.9944	10.5960	2.0050

Table 5.182. Etype = 4, J=10, k=19, $\psi = 1/\sqrt{p}$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.2236	Cov	0.9912	0.9656	0.9694	0.9926	0.9378
			Len	74.1391	14.4975	2.5877	2.7097	14.2421
100	40	0.1581	Cov	0.9880	0.9586	0.8794	0.9700	0.9328
			Len	76.9352	17.2799	2.3791	11.5352	15.7920
100	100	0.1	Cov	0.9860	0.9350	0.3606	0.9830	0.9022
			Len	78.4907	19.8367	1.5478	16.9853	17.2474
100	200	0.07	Cov	0.9880	0.9336	0.0630	0.9800	0.8784
			Len	82.9398	22.2529	0.4431	19.2205	17.9218
400	20	0.2236	Cov	0.9786	0.9856	0.9856	0.9856	0.9856
			Len	3.0761	2.2230	2.2230	2.2230	2.2230
400	40	0.1581	Cov	0.9782	0.9832	0.9766	0.9766	0.9766
			Len	3.0197	2.2381	2.2498	2.2498	2.2498
400	100	0.1	Cov	0.9720	0.9670	0.9094	0.9506	0.9308
			Len	2.9558	2.2503	2.1994	11.1114	2.2339
400	200	0.07	Cov	0.9694	0.9588	0.7520	0.9538	0.9022
			Len	3.7717	2.2554	1.9034	14.4625	2.1987
1000	20	0.2236	Cov	0.9606	0.9654	0.9654	0.9654	0.9654
			Len	2.7176	2.0059	2.0059	2.0059	2.0059
1000	40	0.1581	Cov	0.9598	0.9642	0.9596	0.9596	0.9596
			Len	2.6569	2.0120	2.0197	2.0197	2.0197
1000	100	0.1	Cov	0.9606	0.9586	0.9292	0.9292	0.9292
			Len	2.5729	2.0189	2.0291	2.0291	2.0291
1000	200	0.07	Cov	0.9586	0.9522	0.8882	0.9074	0.8958
			Len	2.4905	2.0238	1.9946	9.4448	2.0048

Table 5.183. Etype = 4, J=10, k=19, $\psi = 0.9$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.9	Cov	0.9906	0.9708	0.9674	0.9954	0.9562
			Len	57.7824	3.4488	2.5866	2.6117	3.0849
100	40	0.9	Cov	0.9878	0.9734	0.8830	0.9908	0.9402
			Len	47.9859	4.0199	2.3594	3.0159	3.0663
100	100	0.9	Cov	0.9916	0.9674	0.3630	0.9840	0.9138
			Len	139.6631	4.0233	1.0473	3.3067	3.0045
100	200	0.9	Cov	0.9910	0.9618	0.0546	0.9888	0.8918
			Len	368.0577	3.7352	0.1340	3.4092	2.9171
400	20	0.9	Cov	0.9824	0.9742	0.9870	0.9870	0.9870
			Len	11.0208	3.0687	2.2223	2.2223	2.2223
400	40	0.9	Cov	0.9830	0.9744	0.9668	0.9668	0.9668
			Len	15.7658	3.8666	2.2158	2.2158	2.2158
400	100	0.9	Cov	0.9802	0.9686	0.9034	0.9628	0.9228
			Len	24.6834	3.9683	2.1371	2.5752	2.1776
400	200	0.9	Cov	0.9772	0.9686	0.7144	0.9666	0.8854
			Len	33.6608	3.9210	1.8326	2.7503	2.1342
1000	20	0.9	Cov	0.9608	0.9516	0.9702	0.9702	0.9702
			Len	9.7061	2.7323	2.0060	2.0060	2.0060
1000	40	0.9	Cov	0.9620	0.9562	0.9572	0.9572	0.9572
			Len	14.1112	3.5394	2.0202	2.0202	2.0202
1000	100	0.9	Cov	0.9592	0.9560	0.9282	0.9282	0.9282
			Len	22.3810	3.7134	2.0292	2.0292	2.0292
1000	200	0.9	Cov	0.9642	0.9548	0.8668	0.9282	0.8792
			Len	30.7298	3.7507	1.9949	2.3261	2.0047

Table 5.184. Etype = 4, J=10, k=p-1, $\psi = 0$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	40	0	Cov	0.9792	0.9368	0.8644	0.9740	0.9190
			Len	28.4967	21.2534	2.3227	25.3696	21.4711
400	40	0	Cov	0.9798	0.9804	0.9804	0.9804	0.9804
			Len	2.4255	2.4110	2.4110	2.4110	2.4110
1000	40	0	Cov	0.9746	0.9746	0.9746	0.9746	0.9746
			Len	2.1419	2.1259	2.1259	2.1259	2.1259
100	100	0	Cov	0.9510	0.8656	0.2744	0.9460	0.8360
			Len	40.4959	31.0481	2.3526	39.3580	30.9095
400	100	0	Cov	0.9732	0.9374	0.9364	0.9554	0.9168
			Len	40.9671	29.1849	2.3589	32.5562	28.5480
1000	100	0	Cov	0.9810	0.9840	0.9840	0.9840	0.9840
			Len	2.4230	2.3857	2.3857	2.3857	2.3857
100	200	0	Cov	0.9462	0.8428	0.0334	0.9494	0.7902
			Len	56.8209	43.7028	0.8547	56.3056	42.0493
400	200	0	Cov	0.9312	0.8452	0.6852	0.9158	0.8060
			Len	49.4425	37.6991	1.6641	44.8418	36.5214
1000	200	0	Cov	0.9796	0.9482	0.9566	0.9634	0.9260
			Len	55.8950	37.9218	2.3692	40.8054	36.9422

Table 5.185. Etype = 4, J=10, k=p-1, $\psi = 1/\sqrt{p}$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	40	0.1581	Cov	0.9842	0.9510	0.8870	0.9918	0.8994
			Len	160.5267	36.2654	2.3675	2.9861	33.3126
100	100	0.1	Cov	0.9896	0.9274	0.3608	0.9808	0.8534
			Len	411.1084	96.8765	1.0673	3.8399	85.9899
100	200	0.07	Cov	0.9864	0.9222	0.0590	0.9834	0.8324
			Len	868.0603	210.0849	0.1624	5.0880	166.2538
400	40	0.1581	Cov	0.9840	0.9810	0.9810	0.9810	0.9810
			Len	6.9062	2.4099	2.4099	2.4099	2.4099
400	100	0.1	Cov	0.9816	0.9522	0.9338	0.9844	0.8972
			Len	258.4853	45.5554	2.3571	2.6309	37.7866
400	200	0.07	Cov	0.9828	0.9438	0.7768	0.9794	0.8578
			Len	567.0794	104.7018	2.0378	3.0456	80.8614
1000	40	0.1581	Cov	0.9780	0.9786	0.9786	0.9786	0.9786
			Len	6.0460	2.1260	2.1260	2.1260	2.1260
1000	100	0.1	Cov	0.9844	0.9842	0.9842	0.9842	0.9842
			Len	17.1686	2.3847	2.3847	2.3847	2.3847
1000	200	0.07	Cov	0.9878	0.9608	0.9510	0.9846	0.9124
			Len	362.7876	56.1351	2.3681	2.5550	46.2543

Table 5.186. Etype = 4, J=10, k=p-1, ψ = 0.9

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	40	0.9	Cov	0.9926	0.9732	0.8874	0.9976	0.9196
			Len	208.1377	6.6131	2.3721	2.6130	4.6622
400	40	0.9	Cov	0.9878	0.9830	0.9830	0.9830	0.9830
			Len	35.0924	6.9742	2.4111	2.4111	2.4111
1000	40	0.9	Cov	0.9816	0.9682	0.9778	0.9778	0.9778
			Len	31.4019	6.3547	2.1261	2.1261	2.1261
100	100	0.9	Cov	0.9888	0.9586	0.3606	0.9994	0.8606
			Len	1634.9570	15.1750	1.0341	2.6107	10.1523
400	100	0.9	Cov	0.9870	0.9844	0.9316	0.9912	0.9104
			Len	142.2538	16.4984	2.3559	2.4098	4.7807
1000	100	0.9	Cov	0.9880	0.9846	0.9846	0.9846	0.9846
			Len	141.6492	16.8474	2.3854	2.3854	2.3854
100	200	0.9	Cov	0.9892	0.9558	0.0582	0.9990	0.8284
			Len	7549.9320	28.3223	0.1236	2.6128	18.8425
400	200	0.9	Cov	0.9896	0.9766	0.7754	0.9962	0.8620
			Len	393.1390	30.6572	2.0399	2.4096	8.9997
1000	200	0.9	Cov	0.9870	0.9820	0.9548	0.9920	0.9204
			Len	391.5209	31.7493	2.3684	2.3845	5.4831

Table 5.187. Etype = 4, J=20, k=1, $\psi = 0$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0	Cov	0.9862	0.9732	0.9198	0.9522	0.9608
			Len	2.2034	2.2123	2.1618	4.3744	2.2069
100	40	0	Cov	0.9810	0.9650	0.8180	0.9518	0.9406
			Len	2.2164	2.2052	1.9795	4.6603	2.1890
100	100	0	Cov	0.9762	0.9534	0.5096	0.9650	0.9192
			Len	2.2383	2.1916	1.3118	4.8428	2.1643
100	200	0	Cov	0.9782	0.9468	0.2296	0.9664	0.9084
			Len	2.2733	2.1842	0.6340	4.9272	2.1398
400	20	0	Cov	0.9436	0.9540	0.9438	0.9438	0.9438
			Len	1.9695	1.9694	1.9738	1.9738	1.9738
400	40	0	Cov	0.9386	0.9416	0.9144	0.9236	0.9204
			Len	1.9359	1.9739	1.9705	3.3106	1.9722
400	100	0	Cov	0.9278	0.9218	0.8288	0.9314	0.8782
			Len	1.9175	1.9727	1.8901	3.9374	1.9511
400	200	0	Cov	0.9418	0.9162	0.6576	0.9408	0.8700
			Len	1.9111	1.9663	1.6078	4.1674	1.9237
1000	20	0	Cov	0.9384	0.9454	0.9378	0.9378	0.9378
			Len	1.9209	1.9206	1.9239	1.9239	1.9239
1000	40	0	Cov	0.9312	0.9414	0.9316	0.9316	0.9316
			Len	1.9257	1.9243	1.9298	1.9298	1.9298
1000	100	0	Cov	0.9266	0.9292	0.9010	0.9238	0.9084
			Len	1.8898	1.9307	1.9284	3.2285	1.9300
1000	200	0	Cov	0.9216	0.9200	0.8642	0.9336	0.8858
			Len	1.8713	1.9319	1.8855	3.7433	1.9164

Table 5.188. Etype = 4, J=20, k=1, $\psi = 1/\sqrt{p}$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.2236	Cov	0.9812	0.9810	0.9182	0.9592	0.9542
			Len	2.2105	2.2106	2.1618	3.7576	2.2036
100	40	0.1581	Cov	0.9836	0.9742	0.8254	0.9590	0.9412
			Len	2.2377	2.2120	2.0127	4.1705	2.1918
100	100	0.1	Cov	0.9800	0.9726	0.5786	0.9616	0.9296
			Len	2.2725	2.2100	1.4874	4.5137	2.1642
100	200	0.07	Cov	0.9722	0.9604	0.3418	0.9572	0.9082
			Len	2.3180	2.2049	0.9027	4.6703	2.1383
400	20	0.2236	Cov	0.9428	0.9614	0.9402	0.9402	0.9402
			Len	1.9674	1.9655	1.9736	1.9736	1.9736
400	40	0.1581	Cov	0.9366	0.9616	0.9128	0.9246	0.9202
			Len	1.9358	1.9657	1.9702	3.0122	1.9718
400	100	0.1	Cov	0.9436	0.9580	0.8400	0.9322	0.8886
			Len	1.9182	1.9673	1.8876	3.6771	1.9496
400	200	0.07	Cov	0.9354	0.9542	0.6604	0.9374	0.8730
			Len	1.9129	1.9688	1.6076	3.9618	1.9233
1000	20	0.2236	Cov	0.9408	0.9578	0.9396	0.9396	0.9396
			Len	1.9195	1.9192	1.9240	1.9240	1.9240
1000	40	0.1581	Cov	0.9322	0.9534	0.9316	0.9316	0.9316
			Len	1.9243	1.9202	1.9302	1.9302	1.9302
1000	100	0.1	Cov	0.9294	0.9506	0.9070	0.9196	0.9124
			Len	1.8897	1.9206	1.9284	3.0381	1.9298
1000	200	0.07	Cov	0.9244	0.9500	0.8456	0.9300	0.8836
			Len	1.8715	1.9208	1.8850	3.5672	1.9156

Table 5.189. Etype = 4, J=20, k=1, $\psi = 0.9$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.9	Cov	0.9818	0.9816	0.9132	0.9780	0.9488
			Len	3.2603	2.2062	2.1538	2.2579	2.2055
100	40	0.9	Cov	0.9796	0.9788	0.8204	0.9804	0.9360
			Len	6.6229	2.2043	1.9597	2.2633	2.1908
100	100	0.9	Cov	0.9774	0.9730	0.5636	0.9854	0.9058
			Len	15.0905	2.2118	1.2759	2.2741	2.1674
100	200	0.9	Cov	0.9716	0.9698	0.3122	0.9858	0.8926
			Len	29.2181	2.2095	0.6490	2.2749	2.1347
400	20	0.9	Cov	0.9644	0.9614	0.9392	0.9392	0.9392
			Len	1.9637	1.9639	1.9737	1.9737	1.9737
400	40	0.9	Cov	0.9714	0.9666	0.9202	0.9436	0.9218
			Len	1.9700	1.9653	1.9702	1.9979	1.9726
400	100	0.9	Cov	0.9710	0.9568	0.8410	0.9476	0.8942
			Len	1.9842	1.9660	1.8882	2.0146	1.9513
400	200	0.9	Cov	0.9646	0.9598	0.6624	0.9538	0.8582
			Len	2.0074	1.9658	1.6057	2.0205	1.9215
1000	20	0.9	Cov	0.9574	0.9568	0.9446	0.9446	0.9446
			Len	1.9220	1.9189	1.9235	1.9235	1.9235
1000	40	0.9	Cov	0.9560	0.9522	0.9302	0.9302	0.9302
			Len	1.9267	1.9192	1.9299	1.9299	1.9299
1000	100	0.9	Cov	0.9524	0.9544	0.9002	0.9300	0.9084
			Len	1.9404	1.9196	1.9289	1.9550	1.9305
1000	200	0.9	Cov	0.9578	0.9514	0.8522	0.9376	0.8800
			Len	1.9648	1.9205	1.8863	1.9699	1.9164

Table 5.190. Etype = 4, J=20, k=19, $\psi = 0$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0	Cov	0.9794	0.9556	0.9510	0.9770	0.9560
			Len	20.1386	15.1662	2.4581	18.4180	16.9239
100	40	0	Cov	0.9790	0.9514	0.8602	0.9748	0.9484
			Len	20.0977	15.1258	2.6989	19.9565	16.9030
100	100	0	Cov	0.9740	0.9362	0.5446	0.9742	0.9466
			Len	19.7129	14.8702	3.1531	20.5945	16.5851
100	200	0	Cov	0.9706	0.9388	0.2488	0.9708	0.9404
			Len	19.8737	15.4457	2.0458	20.5198	16.1239
400	20	0	Cov	0.9856	0.9868	0.9868	0.9868	0.9868
			Len	2.2295	2.2221	2.2221	2.2221	2.2221
400	40	0	Cov	0.9774	0.9818	0.9670	0.9546	0.9848
			Len	2.8631	2.2273	2.2461	13.1649	2.2231
400	100	0	Cov	0.9808	0.9828	0.9110	0.9706	0.9856
			Len	3.2020	2.2288	2.1972	17.2159	2.2227
400	200	0	Cov	0.9780	0.9820	0.7478	0.9690	0.9842
			Len	3.4866	2.2295	1.9037	18.5827	2.2235
1000	20	0	Cov	0.9688	0.9676	0.9676	0.9676	0.9676
			Len	2.0125	2.0055	2.0055	2.0055	2.0055
1000	40	0	Cov	0.9596	0.9668	0.9608	0.9608	0.9608
			Len	2.0134	2.0140	2.0196	2.0196	2.0196
1000	100	0	Cov	0.9564	0.9508	0.9300	0.9334	0.9376
			Len	2.0217	2.0253	2.0299	11.4562	2.0309
1000	200	0	Cov	0.9538	0.9414	0.8876	0.9398	0.9202
			Len	2.0546	2.0291	1.9941	14.4397	2.0257

Table 5.191. Etype = 4, J=20, k=19, $\psi = 1/\sqrt{p}$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.2236	Cov	0.9820	0.9580	0.9546	0.9908	0.9414
			Len	80.6432	18.1406	2.4096	2.5950	25.1561
100	40	0.1581	Cov	0.9818	0.9454	0.8818	0.9792	0.9356
			Len	79.6964	19.6076	2.7470	12.5679	27.0543
100	100	0.1	Cov	0.9826	0.9216	0.6326	0.9786	0.9226
			Len	78.1016	20.7663	3.5614	17.3771	28.5521
100	200	0.07	Cov	0.9830	0.9336	0.3740	0.9802	0.9136
			Len	88.7580	27.0505	2.9412	19.1943	29.0220
400	20	0.2236	Cov	0.9812	0.9834	0.9834	0.9834	0.9834
			Len	3.0810	2.2217	2.2217	2.2217	2.2217
400	40	0.1581	Cov	0.9786	0.9814	0.9636	0.9652	0.9842
			Len	39.5138	3.2312	2.2449	8.3391	2.3283
400	100	0.1	Cov	0.9802	0.9750	0.9150	0.9682	0.9814
			Len	55.1051	6.7828	2.1945	14.1190	2.6051
400	200	0.07	Cov	0.9750	0.9676	0.7384	0.9710	0.9802
			Len	59.8448	9.6148	1.9024	16.5586	3.0102
1000	20	0.2236	Cov	0.9624	0.9682	0.9682	0.9682	0.9682
			Len	2.7150	2.0058	2.0058	2.0058	2.0058
1000	40	0.1581	Cov	0.9610	0.9630	0.9604	0.9604	0.9604
			Len	2.6552	2.0120	2.0196	2.0196	2.0196
1000	100	0.1	Cov	0.9634	0.9598	0.9290	0.9344	0.9324
			Len	2.5721	2.0189	2.0299	9.4242	2.0305
1000	200	0.07	Cov	0.9632	0.9534	0.8890	0.9368	0.9246
			Len	2.4927	2.0243	1.9954	12.8533	2.0268

Table 5.192. Etype = 4, J=20, k=19, $\psi = 0.9$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.9	Cov	0.9832	0.9704	0.9552	0.9958	0.9486
			Len	231.9873	4.0297	2.4138	2.4130	4.1499
100	40	0.9	Cov	0.9850	0.9626	0.8762	0.9870	0.9402
			Len	312.5916	4.0661	2.2380	2.9743	4.1254
100	100	0.9	Cov	0.9840	0.9544	0.6208	0.9858	0.9262
			Len	525.0556	3.9765	1.5272	3.2690	4.0714
100	200	0.9	Cov	0.9828	0.9560	0.3686	0.9864	0.9078
			Len	943.1499	3.9577	0.8266	3.3666	4.0119
400	20	0.9	Cov	0.9826	0.9768	0.9852	0.9852	0.9852
			Len	11.0236	3.0671	2.2220	2.2220	2.2220
400	40	0.9	Cov	0.9816	0.9718	0.9582	0.9724	0.9708
			Len	15.7471	3.8533	2.2161	2.4773	2.2478
400	100	0.9	Cov	0.9728	0.9684	0.8950	0.9718	0.9618
			Len	24.7039	3.9662	2.1384	2.7945	2.2792
400	200	0.9	Cov	0.9734	0.9678	0.7290	0.9716	0.9530
			Len	33.6315	3.8999	1.8338	2.9154	2.3068
1000	20	0.9	Cov	0.9660	0.9602	0.9694	0.9694	0.9694
			Len	9.7133	2.7356	2.0063	2.0063	2.0063
1000	40	0.9	Cov	0.9628	0.9618	0.9620	0.9620	0.9620
			Len	14.1156	3.5456	2.0197	2.0197	2.0197
1000	100	0.9	Cov	0.9606	0.9584	0.9362	0.9486	0.9422
			Len	22.3740	3.7415	2.0293	2.3605	2.0299
1000	200	0.9	Cov	0.9660	0.9594	0.8844	0.9514	0.9200
			Len	30.7152	3.7624	1.9944	2.5649	2.0256

Table 5.193. Etype = 4, J=20, k=p-1, $\psi = 0$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	40	0	Cov	0.9720	0.9306	0.8394	0.9732	0.9416
			Len	28.5121	22.7825	3.0382	27.7448	24.8264
400	40	0	Cov	0.9766	0.9562	0.9648	0.9604	0.9456
			Len	25.4145	16.9398	2.2462	18.6641	17.7505
1000	40	0	Cov	0.9794	0.9794	0.9794	0.9794	0.9794
			Len	2.1420	2.1262	2.1262	2.1262	2.1262
100	100	0	Cov	0.9596	0.8954	0.4930	0.9586	0.9170
			Len	41.9656	33.9629	6.0206	42.5988	37.2741
400	100	0	Cov	0.9780	0.9416	0.9016	0.9688	0.9388
			Len	43.1429	34.2330	2.1945	38.8630	34.7183
1000	100	0	Cov	0.9746	0.9518	0.9620	0.9598	0.9434
			Len	40.0707	26.8778	2.2235	29.1308	27.6031
100	200	0	Cov	0.9590	0.8998	0.2216	0.9656	0.9028
			Len	60.2054	50.1366	5.8707	60.2529	51.7206
400	200	0	Cov	0.9434	0.8840	0.6760	0.9366	0.8692
			Len	53.8774	44.4156	1.6602	51.4833	44.8413
1000	200	0	Cov	0.9714	0.9372	0.9324	0.9606	0.9296
			Len	60.0953	46.7967	2.2077	52.4173	47.0331

Table 5.194. Etype = 4, J=20, k=p-1, $\psi = 1/\sqrt{p}$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	40	0.1581	Cov	0.9840	0.9422	0.8832	0.9834	0.9344
			Len	162.0408	39.4019	2.2331	2.9203	55.1993
100	100	0.1	Cov	0.9816	0.9120	0.6420	0.9814	0.9080
			Len	397.7579	98.1376	1.5681	3.7901	142.4024
100	200	0.07	Cov	0.9830	0.9304	0.3938	0.9792	0.8956
			Len	914.5265	257.8100	1.0006	5.0027	281.8180
400	40	0.1581	Cov	0.9814	0.9634	0.9686	0.9846	0.9368
			Len	130.6620	21.2663	2.2454	2.2954	20.5967
400	100	0.1	Cov	0.9776	0.9552	0.9052	0.9766	0.9030
			Len	354.1583	68.6721	2.1972	2.5754	62.8561
400	200	0.07	Cov	0.9770	0.9412	0.7464	0.9738	0.8816
			Len	709.1123	142.5048	1.9010	3.0177	129.3581
1000	40	0.1581	Cov	0.9748	0.9746	0.9746	0.9746	0.9746
			Len	6.0443	2.1264	2.1264	2.1264	2.1264
1000	100	0.1	Cov	0.9768	0.9658	0.9658	0.9818	0.9252
			Len	263.4808	37.2447	2.2237	2.2918	33.9591
1000	200	0.07	Cov	0.9852	0.9592	0.9258	0.9774	0.9186
			Len	585.4471	92.5241	2.2073	2.5094	79.5852

Table 5.195. Etype = 4, J=20, k=p-1, $\psi = 0.9$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	40	0.9	Cov	0.9872	0.9634	0.8788	0.9976	0.9308
			Len	700.7226	7.0684	2.2276	2.4119	7.3447
400	40	0.9	Cov	0.9818	0.9686	0.9636	0.9884	0.9380
			Len	32.7403	6.5050	2.2464	2.2230	3.3579
1000	40	0.9	Cov	0.9774	0.9700	0.9768	0.9768	0.9768
			Len	31.3584	6.3693	2.1273	2.1273	2.1273
100	100	0.9	Cov	0.9844	0.9522	0.6072	0.9990	0.9080
			Len	3048.0350	15.9980	1.4633	2.4120	17.3067
400	100	0.9	Cov	0.9810	0.9676	0.9090	0.9914	0.9114
			Len	136.9069	15.3803	2.1974	2.2232	7.4318
1000	100	0.9	Cov	0.9828	0.9736	0.9630	0.9876	0.9360
			Len	131.9889	15.7172	2.2232	2.1964	4.4342
100	200	0.9	Cov	0.9832	0.9510	0.3522	0.9986	0.8888
			Len	10596.6600	32.0807	0.7421	2.4124	33.3150
400	200	0.9	Cov	0.9808	0.9620	0.7342	0.9956	0.8882
			Len	490.9135	28.4902	1.9022	2.2230	14.3662
1000	200	0.9	Cov	0.9822	0.9758	0.9322	0.9894	0.9188
			Len	364.9735	29.5261	2.2068	2.1959	8.8981

Table 5.196. Etype = 4, J=50, k=1, $\psi = 0$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0	Cov	0.9846	0.9806	0.9384	0.9630	0.9952
			Len	2.3015	2.2049	2.6787	4.9247	2.1995
100	40	0	Cov	0.9882	0.9808	0.9000	0.9658	0.9950
			Len	2.3263	2.2032	2.7683	5.0067	2.1994
100	100	0	Cov	0.9846	0.9770	0.8256	0.9626	0.9926
			Len	2.3575	2.2016	2.6776	5.0590	2.1987
100	200	0	Cov	0.9798	0.9736	0.7358	0.9634	0.9920
			Len	2.3927	2.2013	2.3972	5.0697	2.1987
400	20	0	Cov	0.9588	0.9518	0.9374	0.9392	0.9404
			Len	1.9546	1.9690	1.9737	3.7098	1.9729
400	40	0	Cov	0.9582	0.9504	0.9192	0.9468	0.9358
			Len	1.9534	1.9706	1.9706	4.1085	1.9748
400	100	0	Cov	0.9558	0.9432	0.8328	0.9472	0.9266
			Len	1.9556	1.9732	1.8884	4.3526	1.9730
400	200	0	Cov	0.9512	0.9314	0.6594	0.9484	0.9156
			Len	1.9592	1.9733	1.6134	4.4399	1.9707
1000	20	0	Cov	0.9456	0.9492	0.9444	0.9444	0.9444
			Len	1.9212	1.9205	1.9242	1.9242	1.9242
1000	40	0	Cov	0.9460	0.9450	0.9318	0.9344	0.9372
			Len	1.9083	1.9240	1.9303	3.3769	1.9296
1000	100	0	Cov	0.9448	0.9358	0.8996	0.9372	0.9210
			Len	1.9006	1.9283	1.9290	3.9989	1.9326
1000	200	0	Cov	0.9434	0.9286	0.8568	0.9392	0.9108
			Len	1.8980	1.9305	1.8851	4.2113	1.9323

Table 5.197. Etype = 4, J=50, k=1, $\psi = 1/\sqrt{p}$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.2236	Cov	0.9834	0.9828	0.9652	0.9660	0.9940
			Len	2.4502	2.2051	4.1036	4.1893	2.1990
100	40	0.1581	Cov	0.9798	0.9792	0.9602	0.9606	0.9946
			Len	2.4776	2.2059	4.3933	4.4644	2.1988
100	100	0.1	Cov	0.9784	0.9754	0.9672	0.9680	0.9954
			Len	2.5161	2.2062	4.6475	4.7049	2.1997
100	200	0.07	Cov	0.9776	0.9696	0.9634	0.9652	0.9934
			Len	2.5652	2.2076	4.7694	4.8226	2.2002
400	20	0.2236	Cov	0.9546	0.9608	0.9442	0.9432	0.9468
			Len	1.9542	1.9643	1.9725	3.1849	1.9715
400	40	0.1581	Cov	0.9560	0.9614	0.9166	0.9396	0.9378
			Len	1.9544	1.9654	1.9697	3.6664	1.9740
400	100	0.1	Cov	0.9534	0.9572	0.8346	0.9490	0.9234
			Len	1.9585	1.9672	1.8891	4.0451	1.9751
400	200	0.07	Cov	0.9606	0.9530	0.6652	0.9514	0.9212
			Len	1.9632	1.9685	1.6211	4.2226	1.9721
1000	20	0.2236	Cov	0.9390	0.9522	0.9392	0.9392	0.9392
			Len	1.9196	1.9194	1.9240	1.9240	1.9240
1000	40	0.1581	Cov	0.9428	0.9546	0.9294	0.9382	0.9314
			Len	1.9081	1.9195	1.9300	3.0593	1.9292
1000	100	0.1	Cov	0.9394	0.9496	0.8946	0.9414	0.9170
			Len	1.9011	1.9199	1.9290	3.7261	1.9327
1000	200	0.07	Cov	0.9354	0.9464	0.8516	0.9446	0.9110
			Len	1.8985	1.9202	1.8853	3.9950	1.9316

Table 5.198. Etype = 4, J=50, k=1, $\psi = 0.9$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.9	Cov	0.9646	0.9854	0.9900	0.9900	0.9844
			Len	10.5127	2.2013	2.2704	2.2705	2.2206
100	40	0.9	Cov	0.9668	0.9828	0.9892	0.9892	0.9790
			Len	15.9635	2.2040	2.2728	2.2728	2.2225
100	100	0.9	Cov	0.9678	0.9770	0.9884	0.9884	0.9766
			Len	26.4048	2.2060	2.2764	2.2764	2.2229
100	200	0.9	Cov	0.9712	0.9752	0.9880	0.9880	0.9746
			Len	45.5496	2.2059	2.2743	2.2743	2.2204
400	20	0.9	Cov	0.9648	0.9630	0.9384	0.9564	0.9430
			Len	1.9793	1.9641	1.9745	2.0050	1.9727
400	40	0.9	Cov	0.9652	0.9606	0.9122	0.9534	0.9290
			Len	2.1170	1.9643	1.9690	2.0171	1.9735
400	100	0.9	Cov	0.9646	0.9550	0.8252	0.9548	0.9210
			Len	3.1030	1.9660	1.8884	2.0252	1.9752
400	200	0.9	Cov	0.9578	0.9570	0.6646	0.9582	0.9148
			Len	5.3494	1.9671	1.6108	2.0287	1.9731
1000	20	0.9	Cov	0.9562	0.9542	0.9448	0.9448	0.9448
			Len	1.9225	1.9195	1.9244	1.9244	1.9244
1000	40	0.9	Cov	0.9554	0.9518	0.9274	0.9414	0.9282
			Len	1.9267	1.9193	1.9300	1.9538	1.9294
1000	100	0.9	Cov	0.9560	0.9562	0.9070	0.9460	0.9196
			Len	1.9406	1.9196	1.9284	1.9723	1.9325
1000	200	0.9	Cov	0.9578	0.9560	0.8496	0.9534	0.9134
			Len	1.9648	1.9207	1.8859	1.9800	1.9325

Table 5.199. Etype = 4, J=50, k=19, $\psi = 0$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0	Cov	0.9568	0.9184	0.9292	0.9580	0.9526
			Len	17.7082	13.8079	6.6031	18.6780	17.9760
100	40	0	Cov	0.9592	0.9166	0.8928	0.9634	0.9508
			Len	17.7027	13.8601	7.9985	18.9825	17.9331
100	100	0	Cov	0.9592	0.9230	0.8244	0.9650	0.9514
			Len	17.7156	13.8747	8.7200	19.2575	17.9586
100	200	0	Cov	0.9616	0.9296	0.7188	0.9608	0.9466
			Len	18.7565	15.7606	8.3039	19.3416	17.9552
400	20	0	Cov	0.9558	0.9396	0.9630	0.9460	0.9346
			Len	16.5187	10.6778	2.0501	13.7645	13.3738
400	40	0	Cov	0.9584	0.9362	0.9318	0.9538	0.9370
			Len	16.5180	10.6751	2.0527	16.0214	13.3648
400	100	0	Cov	0.9596	0.9388	0.8574	0.9578	0.9378
			Len	16.5096	10.6481	1.9833	17.3029	13.3743
400	200	0	Cov	0.9632	0.9460	0.6908	0.9596	0.9444
			Len	16.5207	10.6925	1.7906	17.7818	13.3646
1000	20	0	Cov	0.9688	0.9690	0.9690	0.9690	0.9690
			Len	2.0129	2.0058	2.0058	2.0058	2.0058
1000	40	0	Cov	0.9630	0.9640	0.9526	0.9454	0.9680
			Len	2.2228	2.0076	2.0183	12.2247	2.0056
1000	100	0	Cov	0.9564	0.9624	0.9256	0.9504	0.9650
			Len	2.3208	2.0085	2.0277	15.7201	2.0055
1000	200	0	Cov	0.9602	0.9640	0.8790	0.9534	0.9650
			Len	2.3795	2.0096	1.9934	16.8589	2.0063

Table 5.200. Etype = 4, J=50, k=19, $\psi = 1/\sqrt{p}$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.2236	Cov	0.9632	0.9266	0.9792	0.9784	0.9402
			Len	69.8262	15.8281	2.3813	2.4000	46.5679
100	40	0.1581	Cov	0.9612	0.9028	0.9650	0.9656	0.9370
			Len	68.8910	17.0394	11.7260	11.9590	48.7826
100	100	0.1	Cov	0.9616	0.8802	0.9642	0.9666	0.9320
			Len	67.3800	17.9376	15.6507	15.8701	50.0622
100	200	0.07	Cov	0.9648	0.8874	0.9662	0.9670	0.9276
			Len	78.0758	25.1793	17.0820	17.2846	50.1822
400	20	0.2236	Cov	0.9616	0.9562	0.9580	0.9752	0.9242
			Len	65.6704	9.9439	2.0493	2.0691	16.2255
400	40	0.1581	Cov	0.9616	0.9542	0.9320	0.9532	0.9366
			Len	64.7273	10.8226	2.0535	10.0211	17.5203
400	100	0.1	Cov	0.9600	0.9436	0.8550	0.9550	0.9216
			Len	63.3828	11.7744	1.9840	14.1939	18.6899
400	200	0.07	Cov	0.9602	0.9330	0.6944	0.9586	0.9264
			Len	61.9345	12.4122	1.8542	15.8363	19.3521
1000	20	0.2236	Cov	0.9606	0.9674	0.9674	0.9674	0.9674
			Len	2.7167	2.0058	2.0058	2.0058	2.0058
1000	40	0.1581	Cov	0.9634	0.9658	0.9562	0.9452	0.9672
			Len	13.9587	2.0355	2.0180	7.7092	2.0083
1000	100	0.1	Cov	0.9608	0.9650	0.9262	0.9512	0.9668
			Len	28.2512	2.2605	2.0282	12.9022	2.0134
1000	200	0.07	Cov	0.9592	0.9664	0.8828	0.9552	0.9684
			Len	37.6885	2.7468	1.9933	15.0167	2.0059

Table 5.201. Etype = 4, J=50, k=19, $\psi = 0.9$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.9	Cov	0.9650	0.9392	0.9930	0.9930	0.9406
			Len	230.8572	3.8273	2.1990	2.1990	7.4740
100	40	0.9	Cov	0.9674	0.9432	0.9752	0.9752	0.9402
			Len	329.5523	3.7704	2.7333	2.7333	7.4297
100	100	0.9	Cov	0.9704	0.9346	0.9714	0.9714	0.9240
			Len	523.0769	3.6219	2.9645	2.9645	7.3322
100	200	0.9	Cov	0.9670	0.9264	0.9686	0.9686	0.9188
			Len	896.4131	3.6200	3.0306	3.0306	7.2336
400	20	0.9	Cov	0.9596	0.9524	0.9626	0.9776	0.9382
			Len	106.3606	3.0093	2.0489	2.0354	3.0134
400	40	0.9	Cov	0.9622	0.9528	0.9358	0.9626	0.9378
			Len	74.8029	3.4451	2.0520	2.4667	3.0168
400	100	0.9	Cov	0.9636	0.9492	0.8712	0.9636	0.9336
			Len	137.0205	3.5381	1.9805	2.7234	3.0358
400	200	0.9	Cov	0.9640	0.9486	0.7010	0.9608	0.9258
			Len	215.7979	3.5042	1.7006	2.8123	3.0535
1000	20	0.9	Cov	0.9602	0.9644	0.9706	0.9706	0.9706
			Len	9.7046	2.7306	2.0061	2.0061	2.0061
1000	40	0.9	Cov	0.9628	0.9602	0.9564	0.9620	0.9666
			Len	14.0998	3.5493	2.0185	2.2873	2.0071
1000	100	0.9	Cov	0.9652	0.9582	0.9310	0.9574	0.9694
			Len	22.3490	3.7253	2.0289	2.6073	2.0108
1000	200	0.9	Cov	0.9654	0.9592	0.8712	0.9586	0.9646
			Len	30.6906	3.7604	1.9913	2.7294	2.0111

Table 5.202. Etype = 4, J=50, k=p-1, $\psi = 0$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	40	0	Cov	0.9548	0.9082	0.8906	0.9604	0.9516
			Len	25.6394	20.9416	11.2454	27.0377	25.9949
400	40	0	Cov	0.9564	0.9352	0.9326	0.9518	0.9382
			Len	24.5502	19.2615	2.0524	22.8591	21.6276
1000	40	0	Cov	0.9658	0.9442	0.9558	0.9456	0.9354
			Len	23.4846	14.8657	2.0179	17.3239	16.9444
100	100	0	Cov	0.9562	0.8946	0.8258	0.9650	0.9484
			Len	41.0737	33.8457	19.5845	43.6193	41.7534
400	100	0	Cov	0.9598	0.9232	0.8640	0.9562	0.9310
			Len	39.8317	33.9176	1.9872	39.1089	36.6911
1000	100	0	Cov	0.9576	0.9258	0.9276	0.9502	0.9258
			Len	39.2547	31.8054	2.0285	35.5793	33.5287
100	200	0	Cov	0.9592	0.9144	0.7410	0.9642	0.9472
			Len	60.8763	53.1727	26.4803	62.1063	59.2100
400	200	0	Cov	0.9500	0.9108	0.6534	0.9518	0.9202
			Len	55.1246	47.9290	2.4078	55.1742	51.4684
1000	200	0	Cov	0.9600	0.9296	0.8748	0.9548	0.9316
			Len	56.6031	48.6421	1.9931	54.0657	50.4780

Table 5.203. Etype = 4, J=50, k=p-1, $\psi = 1/\sqrt{p}$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	40	0.1581	Cov	0.9624	0.8944	0.9736	0.9744	0.9320
			Len	139.9899	34.1956	2.6555	2.6821	98.8902
100	100	0.1	Cov	0.9632	0.8704	0.9650	0.9660	0.9346
			Len	344.5808	85.0248	3.4051	3.4421	254.0269
100	200	0.07	Cov	0.9666	0.8764	0.9648	0.9652	0.9204
			Len	799.7930	236.3344	4.4549	4.5041	505.6271
400	40	0.1581	Cov	0.9634	0.9358	0.9310	0.9700	0.9212
			Len	131.8341	24.3325	2.0538	2.1527	38.7537
400	100	0.1	Cov	0.9596	0.9250	0.8758	0.9674	0.9100
			Len	324.8297	65.1857	1.9802	2.4139	105.6726
400	200	0.07	Cov	0.9608	0.9168	0.6938	0.9606	0.8990
			Len	637.1557	130.5025	1.7008	2.8109	215.3958
1000	40	0.1581	Cov	0.9558	0.9516	0.9534	0.9678	0.9296
			Len	128.7479	17.7718	2.0180	2.0361	19.8288
1000	100	0.1	Cov	0.9632	0.9430	0.9324	0.9626	0.9132
			Len	237.6814	52.7966	2.0285	2.2960	64.1876
1000	200	0.07	Cov	0.9620	0.9364	0.8918	0.9612	0.9054
			Len	625.8326	107.7041	1.9927	2.3581	133.2046

Table 5.204. Etype = 4, J=50, k=p-1, $\psi = 0.9$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	40	0.9	Cov	0.9648	0.9308	0.9938	0.9938	0.9304
			Len	676.7309	6.4794	2.1991	2.1991	14.6622
400	40	0.9	Cov	0.9634	0.9486	0.9366	0.9788	0.9240
			Len	311.4472	5.7185	2.0521	2.0348	5.2064
1000	40	0.9	Cov	0.9620	0.9550	0.9524	0.9678	0.9360
			Len	28.9205	5.8617	2.0187	2.0057	3.1947
100	100	0.9	Cov	0.9660	0.9260	0.9930	0.9930	0.9204
			Len	2729.5260	14.3360	2.1994	2.1994	36.1595
400	100	0.9	Cov	0.9648	0.9488	0.8596	0.9812	0.9092
			Len	1859.1730	13.3744	1.9795	2.0360	12.4624
1000	100	0.9	Cov	0.9630	0.9580	0.9320	0.9700	0.9142
			Len	121.6698	13.8685	2.0282	2.0058	7.4149
100	200	0.9	Cov	0.9652	0.9200	0.9950	0.9950	0.9216
			Len	9362.4050	28.4303	2.1993	2.1993	71.3569
400	200	0.9	Cov	0.9636	0.9388	0.6912	0.9836	0.8968
			Len	6111.7320	25.6200	1.6979	2.0356	24.5495
1000	200	0.9	Cov	0.9632	0.9522	0.8752	0.9732	0.9012
			Len	421.7521	25.9116	1.9927	2.0057	14.7530

Table 5.205. Etype = 5, J=5, k=1, $\psi = 0$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0	Cov	0.9258	0.9376	0.925	0.925	0.925
			Len	12.5796	13.2767	12.5799	12.5799	12.5799
100	40	0	Cov	0.9282	0.9344	0.8662	0.9358	0.8846
			Len	12.0279	12.7186	10.9417	12.8198	11.2516
100	100	0	Cov	0.928	0.9266	0.146	0.9438	0.7802
			Len	11.7349	11.8108	3.01940	12.9826	9.3105
100	200	0	Cov	0.9222	0.9086	2.00E-04	0.9378	0.6688
			Len	11.5869	11.1475	0.0073	12.8844	7.8792
400	20	0	Cov	0.9434	0.9446	0.9434	0.9434	0.9434
			Len	12.1740	12.3650	12.1728	12.1728	12.1728
400	40	0	Cov	0.936	0.9386	0.936	0.936	0.936
			Len	11.7765	12.1624	11.7746	11.7746	11.7746
400	100	0	Cov	0.931	0.9404	0.9206	0.9326	0.9212
			Len	10.6993	11.4872	10.5769	10.9831	10.5878
400	200	0	Cov	0.9274	0.928	0.755	0.934	0.8328
			Len	10.3280	10.8774	8.92832	11.1283	9.4445
1000	20	0	Cov	0.941	0.9424	0.9412	0.9412	0.9412
			Len	12.5242	12.6149	12.5225	12.5225	12.5225
1000	40	0	Cov	0.9454	0.945	0.9458	0.9458	0.9458
			Len	12.2704	12.4530	12.2676	12.2676	12.2676
1000	100	0	Cov	0.9402	0.941	0.94	0.94	0.94
			Len	11.6829	12.1434	11.6794	11.6794	11.6794
1000	200	0	Cov	0.9358	0.9454	0.9354	0.9354	0.9354
			Len	10.8651	11.7432	10.8620	10.8620	10.8620

Table 5.206. Etype = 5, J=5, k=1, $\psi = 1/\sqrt{p}$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.2236	Cov	0.927	0.941	0.9264	0.9264	0.9264
			Len	12.6014	13.5765	12.6022	12.6022	12.6022
100	40	0.1581	Cov	0.9332	0.9426	0.8722	0.9386	0.8936
			Len	12.1356	13.6362	10.9956	12.8486	11.3423
100	100	0.1	Cov	0.9324	0.9412	0.1426	0.943	0.7694
			Len	11.5984	13.2617	3.1010	12.7947	9.2731
100	200	0.07	Cov	0.9322	0.9428	0.0014	0.9418	0.6756
			Len	11.6758	13.2347	0.0111	12.9646	7.9554
400	20	0.2236	Cov	0.947	0.9456	0.947	0.947	0.947
			Len	12.1779	12.4600	12.1758	12.1758	12.1758
400	40	0.1581	Cov	0.9354	0.941	0.9356	0.9356	0.9356
			Len	11.7603	12.3512	11.7579	11.7579	11.7579
400	100	0.1	Cov	0.9276	0.941	0.9156	0.9322	0.9158
			Len	10.7391	12.1297	10.6181	11.0151	10.6256
400	200	0.07	Cov	0.924	0.939	0.7548	0.9328	0.8328
			Len	10.4139	12.182	8.96563	11.1900	9.48812
1000	20	0.2236	Cov	0.9456	0.9488	0.9456	0.9456	0.9456
			Len	12.5023	12.6391	12.4999	12.4999	12.4999
1000	40	0.1581	Cov	0.945	0.9454	0.945	0.945	0.945
			Len	12.2532	12.5521	12.2500	12.2500	12.2500
1000	100	0.1	Cov	0.9408	0.9436	0.94	0.94	0.94
			Len	11.7167	12.4605	11.7116	11.7116	11.7116
1000	200	0.07	Cov	0.9298	0.942	0.9296	0.9296	0.9296
			Len	10.8215	12.1867	10.8185	10.8185	10.8185

Table 5.207. Etype = 5, J=5, k=1, $\psi = 0.9$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.9	Cov	0.9428	0.9432	0.9362	0.9362	0.9362
			Len	14.1825	14.2809	12.8950	12.8945	12.8945
100	40	0.9	Cov	0.9484	0.9482	0.8726	0.9402	0.8972
			Len	14.6475	14.6444	11.2757	13.1552	11.6357
100	100	0.9	Cov	0.9482	0.946	0.142	0.9482	0.7874
			Len	14.7963	14.7700	3.15487	13.3202	9.56021
100	200	0.9	Cov	0.9484	0.9482	0.0018	0.9504	0.684
			Len	15.5186	15.3961	0.0116	13.8322	8.2162
400	20	0.9	Cov	0.9374	0.9382	0.9338	0.9338	0.9338
			Len	12.5808	12.5789	12.2404	12.2404	12.2404
400	40	0.9	Cov	0.9422	0.9418	0.9396	0.9396	0.9396
			Len	12.5490	12.5415	11.7984	11.7984	11.7984
400	100	0.9	Cov	0.9466	0.9474	0.9182	0.9338	0.92
			Len	12.6361	12.6031	10.7286	11.0926	10.7348
400	200	0.9	Cov	0.9474	0.9474	0.7514	0.942	0.8328
			Len	12.6324	12.5248	8.96418	11.0634	9.49282
1000	20	0.9	Cov	0.943	0.9434	0.9434	0.9434	0.9434
			Len	12.7024	12.7001	12.5302	12.5302	12.5302
1000	40	0.9	Cov	0.9438	0.9442	0.9436	0.9436	0.9436
			Len	12.7051	12.6960	12.3385	12.3385	12.3385
1000	100	0.9	Cov	0.945	0.9442	0.9404	0.9404	0.9404
			Len	12.6737	12.6341	11.7139	11.7139	11.7139
1000	200	0.9	Cov	0.9464	0.9474	0.9298	0.9298	0.9298
			Len	12.6283	12.564	10.8085	10.8085	10.8085

Table 5.208. Etype = 5, J=5, k=19, $\psi = 0$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0	Cov	0.9576	0.9574	0.9574	0.9574	0.9574
			Len	21.8486	21.8758	21.8446	21.8446	21.8446
100	40	0	Cov	0.9524	0.939	0.9104	0.9494	0.9266
			Len	21.1718	18.0553	15.3198	21.9683	16.9410
100	100	0	Cov	0.9432	0.918	0.158	0.9438	0.8382
			Len	19.4678	15.5473	3.4440	21.5672	13.1729
100	200	0	Cov	0.935	0.8908	0.0014	0.9392	0.6958
			Len	18.9057	14.8884	0.00985	21.1592	11.3972
400	20	0	Cov	0.9716	0.9718	0.9718	0.9718	0.9718
			Len	21.2146	21.2147	21.2147	21.2147	21.2147
400	40	0	Cov	0.9694	0.9714	0.9696	0.9696	0.9696
			Len	20.2454	20.7301	20.2227	20.2227	20.2227
400	100	0	Cov	0.9626	0.9642	0.9572	0.9614	0.9568
			Len	17.9759	19.1412	17.0824	18.5170	17.1200
400	200	0	Cov	0.9538	0.956	0.8676	0.9516	0.9248
			Len	17.8300	17.6462	12.3695	20.2032	13.9946
1000	20	0	Cov	0.9576	0.9566	0.9566	0.9566	0.9566
			Len	15.7503	15.7497	15.7497	15.7497	15.7497
1000	40	0	Cov	0.952	0.9514	0.9522	0.9522	0.9522
			Len	15.5954	15.7333	15.585	15.585	15.585
1000	100	0	Cov	0.9514	0.9524	0.9508	0.9508	0.9508
			Len	14.6822	15.2391	14.6611	14.6611	14.6611
1000	200	0	Cov	0.947	0.954	0.9464	0.9464	0.9464
			Len	13.3337	14.5436	13.3045	13.3045	13.3045

Table 5.209. Etype = 5, J=5, k=19, $\psi = 1/\sqrt{p}$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.2236	Cov	0.97	0.9698	0.9702	0.9702	0.9702
			Len	22.3154	22.3216	22.2330	22.2330	22.2330
100	40	0.1581	Cov	0.9854	0.9588	0.9394	0.9664	0.9528
			Len	42.7944	20.4749	17.0877	22.5241	18.8733
100	100	0.1	Cov	0.982	0.9384	0.195	0.9644	0.896
			Len	53.9787	20.4416	4.1356	24.8207	16.6221
100	200	0.07	Cov	0.9822	0.9186	0.0022	0.9652	0.7968
			Len	59.4845	20.8285	0.0179	25.9728	15.1522
400	20	0.2236	Cov	0.97	0.9702	0.9702	0.9702	0.9702
			Len	21.2529	21.2535	21.2535	21.2535	21.2535
400	40	0.1581	Cov	0.9646	0.9648	0.964	0.964	0.964
			Len	20.7000	20.9104	20.2895	20.2895	20.2895
400	100	0.1	Cov	0.9624	0.9652	0.9554	0.9574	0.9544
			Len	18.1066	20.0108	17.1180	18.3718	17.1537
400	200	0.07	Cov	0.9574	0.9616	0.8692	0.9522	0.9244
			Len	18.0041	19.5543	12.4616	19.7989	14.1080
1000	20	0.2236	Cov	0.9586	0.9582	0.9582	0.9582	0.9582
			Len	15.7376	15.7355	15.7355	15.7355	15.7355
1000	40	0.1581	Cov	0.9556	0.9544	0.9554	0.9554	0.9554
			Len	15.7489	15.7450	15.5582	15.5582	15.5582
1000	100	0.1	Cov	0.9518	0.9512	0.9508	0.9508	0.9508
			Len	15.3422	15.5728	14.7249	14.7249	14.7249
1000	200	0.07	Cov	0.9462	0.9514	0.9442	0.9442	0.9442
			Len	13.6589	15.1367	13.2567	13.2567	13.2567

Table 5.210. Etype = 5, J=5, k=19, $\psi = 0.9$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.9	Cov	0.9564	0.952	0.9456	0.9456	0.9456
			Len	16.8047	15.7409	14.6960	14.6960	14.6960
100	40	0.9	Cov	0.9552	0.9502	0.8872	0.9482	0.9042
			Len	18.5014	15.2640	12.0424	14.3738	12.4881
100	100	0.9	Cov	0.9618	0.9412	0.1498	0.9438	0.8014
			Len	25.3706	15.0006	3.25912	14.3495	10.0154
100	200	0.9	Cov	0.9732	0.9432	0.0022	0.948	0.6964
			Len	35.3294	14.4798	0.01169	14.1647	8.3613
400	20	0.9	Cov	0.9462	0.9472	0.943	0.943	0.943
			Len	13.9099	13.3975	13.2507	13.2507	13.2507
400	40	0.9	Cov	0.9434	0.9402	0.9376	0.9376	0.9376
			Len	15.0170	13.4708	12.7569	12.7569	12.7569
400	100	0.9	Cov	0.9502	0.9456	0.9244	0.9352	0.9244
			Len	21.3066	13.1788	11.2113	11.6349	11.2219
400	200	0.9	Cov	0.9536	0.9458	0.7746	0.941	0.849
			Len	30.1652	13.1159	9.2705	11.6880	9.8688
1000	20	0.9	Cov	0.9458	0.945	0.9462	0.9462	0.9462
			Len	13.6712	13.3215	13.2764	13.2764	13.2764
1000	40	0.9	Cov	0.9482	0.9446	0.9432	0.9432	0.9432
			Len	14.3903	13.2879	12.9620	12.9620	12.9620
1000	100	0.9	Cov	0.9482	0.9454	0.9406	0.9406	0.9406
			Len	20.690	13.2044	12.2765	12.2765	12.2765
1000	200	0.9	Cov	0.9554	0.945	0.9336	0.9336	0.9336
			Len	29.5861	13.1402	11.2574	11.2574	11.2574

Table 5.211. Etype = 5, J=5, k=p-1, $\psi = 0$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	40	0	Cov	0.9586	0.9208	0.9292	0.952	0.8948
			Len	28.5380	21.1580	15.5517	25.4152	20.5136
400	40	0	Cov	0.9698	0.9696	0.9696	0.9696	0.9696
			Len	21.7573	21.7556	21.7556	21.7556	21.7556
1000	40	0	Cov	0.9676	0.9676	0.9676	0.9676	0.9676
			Len	19.8811	19.8813	19.8813	19.8813	19.8813
100	100	0	Cov	0.9264	0.8012	0.1494	0.9232	0.6942
			Len	36.7954	26.2149	3.3562	35.0649	23.7848
400	100	0	Cov	0.9808	0.9638	0.9694	0.969	0.9502
			Len	36.7982	24.5807	21.1077	26.089	23.7750
1000	100	0	Cov	0.9748	0.9742	0.9742	0.9742	0.9742
			Len	22.7113	22.7117	22.7117	22.7117	22.7117
100	200	0	Cov	0.9224	0.7574	0.001	0.919	0.605
			Len	51.1282	35.8587	0.0189	50.6744	29.8623
400	200	0	Cov	0.8888	0.7662	0.779	0.8652	0.7142
			Len	41.6048	29.2902	9.4011	34.6423	26.8346
1000	200	0	Cov	0.9722	0.971	0.971	0.971	0.971
			Len	23.2572	23.2567	23.2567	23.2567	23.2567

Table 5.212. Etype = 5, J=5, k=p-1, $\psi = 1/\sqrt{p}$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	40	0.1581	Cov	0.9942	0.9578	0.9434	0.9646	0.9228
			Len	110.8926	28.6356	18.2604	22.7531	24.5963
100	100	0.1	Cov	0.993	0.925	0.2016	0.9676	0.8048
			Len	331.234	72.6509	4.3968	22.7630	51.3151
100	200	0.07	Cov	0.9938	0.8988	0.002	0.9702	0.713
			Len	711.8182	151.4833	0.01613	22.9475	93.3569
400	40	0.1581	Cov	0.9678	0.9676	0.9676	0.9676	0.9676
			Len	21.6885	21.6812	21.6811	21.6811	21.6811
400	100	0.1	Cov	0.993	0.9698	0.9692	0.9742	0.947
			Len	117.9303	26.6882	21.1363	22.3814	23.7304
400	200	0.07	Cov	0.9884	0.9336	0.916	0.9692	0.8364
			Len	345.5698	68.8206	15.2221	22.3215	49.6054
1000	40	0.1581	Cov	0.9634	0.963	0.963	0.963	0.963
			Len	19.8178	19.8024	19.8024	19.8024	19.8024
1000	100	0.1	Cov	0.9724	0.9716	0.9716	0.9716	0.9716
			Len	22.9606	22.6312	22.6312	22.6312	22.6312
1000	200	0.07	Cov	0.9854	0.9738	0.9738	0.9738	0.9738
			Len	38.2751	23.2984	23.2984	23.2984	23.2984

Table 5.213. Etype = 5, J=5, k=p-1, $\psi = 0.9$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	40	0.9	Cov	0.9738	0.9528	0.9082	0.9516	0.924
			Len	34.9475	18.2568	13.9740	17.1172	14.5943
400	40	0.9	Cov	0.9556	0.9486	0.9454	0.9454	0.9454
			Len	29.0085	15.1709	14.1482	14.1482	14.1482
1000	40	0.9	Cov	0.9524	0.9486	0.9484	0.9484	0.9484
			Len	27.8509	14.5081	13.9680	13.9680	13.9680
100	100	0.9	Cov	0.9918	0.9652	0.1838	0.9656	0.8766
			Len	155.072	24.1433	3.8547	19.7862	13.4246
400	100	0.9	Cov	0.978	0.9644	0.9546	0.9592	0.9552
			Len	129.5812	22.4868	16.0230	16.9215	16.0497
1000	100	0.9	Cov	0.9666	0.9612	0.9586	0.9586	0.9586
			Len	120.2519	20.4326	15.9724	15.9724	15.9724
100	200	0.9	Cov	0.9932	0.9662	0.002	0.9672	0.7948
			Len	778.9447	34.9175	0.0151	21.5343	14.6161
400	200	0.9	Cov	0.988	0.9702	0.8834	0.9646	0.9306
			Len	381.4635	34.4416	12.9886	18.9996	14.7174
1000	200	0.9	Cov	0.982	0.9752	0.9652	0.9652	0.9652
			Len	363.7216	34.1324	18.6392	18.6392	18.6392

Table 5.214. Etype = 5, J=10, k=1, $\psi = 0$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0	Cov	0.9396	0.9432	0.9328	0.9426	0.9332
			Len	13.3066	13.5331	12.7645	13.8106	12.9253
100	40	0	Cov	0.9362	0.9336	0.8638	0.9404	0.9182
			Len	13.0505	12.9936	10.9648	13.8454	12.0872
100	100	0	Cov	0.9424	0.9346	0.2858	0.9478	0.888
			Len	12.9172	12.4509	4.4108	13.8887	11.0668
100	200	0	Cov	0.9354	0.9252	0.0406	0.941	0.8626
			Len	12.8808	12.1061	0.3827	13.7991	10.4264
400	20	0	Cov	0.9408	0.9422	0.9406	0.9406	0.9406
			Len	12.1443	12.3398	12.1431	12.1431	12.1431
400	40	0	Cov	0.9456	0.9472	0.9456	0.9456	0.9456
			Len	11.745	12.1327	11.7434	11.7434	11.7434
400	100	0	Cov	0.944	0.943	0.9222	0.9444	0.929
			Len	11.4722	11.6449	10.6342	11.9554	10.8754
400	200	0	Cov	0.9392	0.9354	0.7604	0.9428	0.9046
			Len	11.4381	11.3221	8.9663	12.0807	10.2511
1000	20	0	Cov	0.9388	0.941	0.9386	0.9386	0.9386
			Len	12.5203	12.6094	12.5184	12.5184	12.5184
1000	40	0	Cov	0.9444	0.9474	0.9446	0.9446	0.9446
			Len	12.2657	12.4602	12.2633	12.2633	12.2633
1000	100	0	Cov	0.9442	0.9488	0.9444	0.9444	0.9444
			Len	11.7039	12.1776	11.6998	11.6998	11.6998
1000	200	0	Cov	0.9428	0.9428	0.9296	0.9426	0.9336
			Len	11.5313	11.7644	10.8226	11.7994	10.9396

Table 5.215. Etype = 5, J=10, k=1, $\psi = 1/\sqrt{p}$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.2236	Cov	0.933	0.939	0.9236	0.9338	0.9272
			Len	12.9533	13.5194	12.4494	13.3624	12.6175
100	40	0.1581	Cov	0.943	0.9464	0.8682	0.949	0.9222
			Len	12.9668	13.5507	10.9101	13.6110	12.0411
100	100	0.1	Cov	0.9308	0.933	0.3136	0.9358	0.8946
			Len	12.9646	13.4346	4.6539	13.8222	11.1777
100	200	0.07	Cov	0.941	0.9408	0.0574	0.9474	0.874
			Len	13.0925	13.3231	0.5578	13.8905	10.5355
400	20	0.2236	Cov	0.9434	0.9438	0.943	0.943	0.943
			Len	12.1980	12.4705	12.1962	12.1962	12.1962
400	40	0.1581	Cov	0.9378	0.9404	0.9372	0.9372	0.9372
			Len	11.7688	12.3558	11.7665	11.7665	11.7665
400	100	0.1	Cov	0.9364	0.9386	0.918	0.9378	0.9254
			Len	11.4761	12.3211	10.6136	11.8998	10.8724
400	200	0.07	Cov	0.9392	0.942	0.756	0.9404	0.9056
			Len	11.3836	12.3062	8.94166	11.9995	10.2081
1000	20	0.2236	Cov	0.941	0.9416	0.941	0.941	0.941
			Len	12.4702	12.6068	12.4682	12.4682	12.4682
1000	40	0.1581	Cov	0.9454	0.9466	0.9458	0.9458	0.9458
			Len	12.3311	12.6244	12.3276	12.3276	12.3276
1000	100	0.1	Cov	0.9452	0.9496	0.9454	0.9454	0.9454
			Len	11.7230	12.4649	11.7182	11.7182	11.7182
1000	200	0.07	Cov	0.9394	0.9452	0.931	0.9428	0.9356
			Len	11.5369	12.4807	10.8401	11.7956	10.9590

Table 5.216. Etype = 5, J=10, k=1, $\psi = 0.9$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.9	Cov	0.9472	0.947	0.9288	0.9408	0.934
			Len	14.2981	14.3620	12.9728	13.8087	13.1278
100	40	0.9	Cov	0.9466	0.9464	0.8736	0.945	0.9206
			Len	14.6569	14.6558	11.3116	14.0733	12.5528
100	100	0.9	Cov	0.9504	0.951	0.3182	0.9514	0.9064
			Len	15.135	15.1019	4.79503	14.4639	11.7208
100	200	0.9	Cov	0.9496	0.9492	0.0628	0.95	0.8858
			Len	15.8199	15.2820	0.5748	14.7434	11.0099
400	20	0.9	Cov	0.939	0.939	0.9384	0.9384	0.9384
			Len	12.5146	12.5121	12.1607	12.1607	12.1607
400	40	0.9	Cov	0.945	0.9454	0.9434	0.9434	0.9434
			Len	12.6054	12.6011	11.8602	11.8602	11.8602
400	100	0.9	Cov	0.9402	0.9392	0.9116	0.9376	0.924
			Len	12.5977	12.5689	10.6953	11.8558	10.9510
400	200	0.9	Cov	0.9418	0.9418	0.7508	0.9372	0.9032
			Len	12.6252	12.5216	8.9820	11.8309	10.2593
1000	20	0.9	Cov	0.9452	0.945	0.9444	0.9444	0.9444
			Len	12.6858	12.6837	12.5163	12.5163	12.5163
1000	40	0.9	Cov	0.9404	0.9412	0.9378	0.9378	0.9378
			Len	12.6387	12.6324	12.2748	12.2748	12.2748
1000	100	0.9	Cov	0.9472	0.9468	0.9456	0.9456	0.9456
			Len	12.6772	12.6369	11.7145	11.7145	11.7145
1000	200	0.9	Cov	0.943	0.9438	0.9318	0.9402	0.933
			Len	12.7300	12.6643	10.869	11.7584	10.9923

Table 5.217. Etype = 5, J=10, k=19, $\psi = 0$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0	Cov	0.9668	0.9558	0.9552	0.9642	0.9524
			Len	26.1337	21.1976	18.9632	24.3208	21.3939
100	40	0	Cov	0.9618	0.9414	0.9054	0.962	0.9352
			Len	24.7806	19.8996	14.2793	24.8038	19.8016
100	100	0	Cov	0.9548	0.9266	0.3318	0.9602	0.8998
			Len	22.9028	18.2863	5.0297	23.9956	17.5996
100	200	0	Cov	0.949	0.9192	0.0384	0.9514	0.8614
			Len	22.1233	17.7703	0.50863	23.3373	16.4074
400	20	0	Cov	0.969	0.969	0.969	0.969	0.969
			Len	21.2833	21.2827	21.2827	21.2827	21.2827
400	40	0	Cov	0.9644	0.966	0.9642	0.9642	0.9642
			Len	20.2904	20.7758	20.2695	20.2695	20.2695
400	100	0	Cov	0.9672	0.9682	0.9576	0.9664	0.963
			Len	20.2051	19.7865	17.1656	22.4751	18.3265
400	200	0	Cov	0.969	0.9666	0.8732	0.9664	0.9606
			Len	20.2716	19.1787	12.4487	23.7768	17.0646
1000	20	0	Cov	0.952	0.9518	0.9518	0.9518	0.9518
			Len	15.7479	15.7467	15.7467	15.7467	15.7467
1000	40	0	Cov	0.9524	0.9534	0.9522	0.9522	0.9522
			Len	15.6009	15.7432	15.5914	15.5914	15.5914
1000	100	0	Cov	0.95	0.9522	0.95	0.95	0.95
			Len	14.6709	15.2194	14.6487	14.6487	14.6487
1000	200	0	Cov	0.9554	0.9562	0.947	0.9432	0.9496
			Len	14.6322	14.7241	13.3413	16.9444	13.5913

Table 5.218. Etype = 5, J=10, k=19, $\psi = 1/\sqrt{p}$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.2236	Cov	0.9852	0.9644	0.9594	0.967	0.95
			Len	73.4453	22.8647	19.8237	21.8029	22.1191
100	40	0.1581	Cov	0.9868	0.9574	0.9238	0.9676	0.9436
			Len	77.4354	24.0287	15.9610	23.9375	22.51640
100	100	0.1	Cov	0.9846	0.9484	0.402	0.972	0.9248
			Len	79.5408	25.0535	6.03909	26.4090	22.6700
100	200	0.07	Cov	0.9858	0.935	0.0604	0.9732	0.9056
			Len	83.7529	26.4774	0.8411	27.6344	22.5119
400	20	0.2236	Cov	0.969	0.9678	0.9678	0.9678	0.9678
			Len	21.2999	21.2949	21.2949	21.2949	21.2949
400	40	0.1581	Cov	0.9662	0.966	0.9652	0.9652	0.9652
			Len	20.5562	20.7449	20.1328	20.1328	20.1328
400	100	0.1	Cov	0.9698	0.9686	0.9604	0.9692	0.9642
			Len	20.3547	20.1073	17.1357	21.5153	18.2941
400	200	0.07	Cov	0.971	0.9648	0.8662	0.9644	0.9572
			Len	23.8694	19.6999	12.4110	22.8896	17.0645
1000	20	0.2236	Cov	0.9508	0.9504	0.9504	0.9504	0.9504
			Len	15.7771	15.7748	15.7748	15.7748	15.7748
1000	40	0.1581	Cov	0.9502	0.9504	0.951	0.951	0.951
			Len	15.7180	15.7136	15.5389	15.5389	15.5389
1000	100	0.1	Cov	0.9576	0.9574	0.9568	0.9568	0.9568
			Len	15.2865	15.4999	14.6732	14.6732	14.6732
1000	200	0.07	Cov	0.9554	0.9568	0.948	0.947	0.9482
			Len	14.6737	15.3201	13.2899	16.3147	13.5331

Table 5.219. Etype = 5, J=10, k=19, $\psi = 0.9$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.9	Cov	0.958	0.9496	0.944	0.953	0.9472
			Len	26.6911	15.7518	14.7045	15.8782	14.9506
100	40	0.9	Cov	0.959	0.941	0.892	0.9466	0.9284
			Len	29.8533	15.4348	12.1502	15.6913	13.7295
100	100	0.9	Cov	0.9662	0.9464	0.3302	0.9506	0.914
			Len	78.1624	14.9938	4.8823	15.4472	12.3045
100	200	0.9	Cov	0.971	0.9414	0.0724	0.9502	0.8856
			Len	212.0299	14.4996	0.5813	15.3180	11.3432
400	20	0.9	Cov	0.9488	0.9462	0.9464	0.9464	0.9464
			Len	13.9543	13.4436	13.2942	13.2942	13.2942
400	40	0.9	Cov	0.9496	0.9482	0.9454	0.9454	0.9454
			Len	14.9630	13.4336	12.7112	12.7112	12.7112
400	100	0.9	Cov	0.9568	0.9452	0.9274	0.947	0.9348
			Len	21.3481	13.2272	11.2437	12.6083	11.5549
400	200	0.9	Cov	0.9536	0.9464	0.765	0.9448	0.9094
			Len	30.2027	13.0654	9.2316	12.5555	10.7266
1000	20	0.9	Cov	0.9492	0.9478	0.9468	0.9468	0.9468
			Len	13.6881	13.3405	13.3012	13.3012	13.3012
1000	40	0.9	Cov	0.9496	0.9438	0.9444	0.9444	0.9444
			Len	14.3771	13.2600	12.9519	12.9519	12.9519
1000	100	0.9	Cov	0.9522	0.9482	0.9426	0.9426	0.9426
			Len	20.6842	13.2796	12.3282	12.3282	12.3282
1000	200	0.9	Cov	0.9522	0.9426	0.9306	0.9392	0.932
			Len	29.5806	13.1923	11.3117	12.3119	11.4552

Table 5.220. Etype = 5, J=10, k=p-1, $\psi = 0$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	40	0	Cov	0.9654	0.9274	0.9068	0.961	0.911
			Len	31.3714	24.4421	13.9170	29.4898	24.6615
400	40	0	Cov	0.9662	0.9658	0.9658	0.9658	0.9658
			Len	21.6148	21.6142	21.6142	21.6142	21.6142
1000	40	0	Cov	0.969	0.9684	0.9684	0.9684	0.9684
			Len	19.8652	19.8636	19.8636	19.8636	19.8636
100	100	0	Cov	0.9496	0.8708	0.3232	0.953	0.841
			Len	42.3279	32.8266	5.3114	41.5254	32.6744
400	100	0	Cov	0.9822	0.9436	0.9618	0.9678	0.9234
			Len	44.0422	32.673	18.4536	36.9448	32.0245
1000	100	0	Cov	0.9708	0.9706	0.9706	0.9706	0.9706
			Len	22.6357	22.6342	22.6342	22.6342	22.6342
100	200	0	Cov	0.9444	0.8416	0.0368	0.9508	0.7994
			Len	58.3654	45.2207	0.95207	58.0851	43.4178
400	200	0	Cov	0.9242	0.8544	0.7644	0.9148	0.8122
			Len	50.4237	38.7848	9.4001	46.2260	37.5964
1000	200	0	Cov	0.976	0.9474	0.972	0.9574	0.9286
			Len	58.0185	40.7035	20.3115	44.3831	39.6634

Table 5.221. Etype = 5, J=10, k=p-1, $\psi = 1/\sqrt{p}$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	40	0.1581	Cov	0.9878	0.9484	0.9286	0.9662	0.9114
			Len	160.1930	39.2474	15.7768	21.6143	36.0451
100	100	0.1	Cov	0.9876	0.93	0.3988	0.9674	0.8592
			Len	410.983	97.5192	5.8497	21.9730	86.5883
100	200	0.07	Cov	0.9888	0.9168	0.0768	0.9666	0.8412
			Len	867.9898	210.8826	0.68871	22.0849	166.7841
400	40	0.1581	Cov	0.9682	0.9686	0.9686	0.9686	0.9686
			Len	21.6487	21.6398	21.6398	21.6398	21.6398
400	100	0.1	Cov	0.9856	0.9558	0.9614	0.9706	0.9078
			Len	258.1911	48.0096	18.4940	21.7855	40.1422
400	200	0.07	Cov	0.9812	0.9408	0.8846	0.9718	0.8642
			Len	567.9275	105.7328	13.3486	21.7389	81.5550
1000	40	0.1581	Cov	0.9628	0.9626	0.9626	0.9626	0.9626
			Len	19.7999	19.7917	19.7917	19.7917	19.7917
1000	100	0.1	Cov	0.975	0.9724	0.9724	0.9724	0.9724
			Len	22.9913	22.6756	22.6756	22.6756	22.6756
1000	200	0.07	Cov	0.9866	0.9624	0.9696	0.974	0.9162
			Len	362.3756	58.1216	20.3000	22.6633	48.2465

Table 5.222. Etype = 5, J=10, k=p-1, $\psi = 0.9$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	40	0.9	Cov	0.9806	0.958	0.9168	0.9624	0.9512
			Len	111.3717	18.3099	13.9227	18.6858	16.1720
400	40	0.9	Cov	0.9608	0.9524	0.9492	0.9492	0.9492
			Len	29.0403	15.1962	14.1503	14.1503	14.1503
1000	40	0.9	Cov	0.9598	0.9532	0.9512	0.9512	0.9512
			Len	27.7944	14.5312	13.9835	13.9835	13.9835
100	100	0.9	Cov	0.9878	0.9588	0.3814	0.9632	0.9228
			Len	1472.005	22.9366	5.70231	21.3264	17.5129
400	100	0.9	Cov	0.9786	0.9672	0.959	0.9672	0.9602
			Len	129.6064	22.5232	16.1155	18.8610	16.8217
1000	100	0.9	Cov	0.969	0.9576	0.9536	0.9536	0.9536
			Len	120.2901	20.4005	16.0046	16.0046	16.0046
100	200	0.9	Cov	0.99	0.96	0.0762	0.9688	0.8628
			Len	7376.066	32.4171	0.6893	21.8305	22.4140
400	200	0.9	Cov	0.9862	0.9702	0.8748	0.9662	0.9362
			Len	382.2339	34.5566	12.9295	20.9986	17.0514
1000	200	0.9	Cov	0.9836	0.9736	0.9602	0.965	0.96
			Len	363.0767	33.9823	18.6582	20.8187	18.9025

Table 5.223. Etype = 5, J=20, k=1, $\psi = 0$

n	p	ψ		Lasso	RL	PLS	PCR	FS
400	20	0	Cov	0.9446	0.9424	0.9444	0.9444	0.9444
			Len	12.1859	12.3768	12.1843	12.1843	12.1843
400	40	0	Cov	0.9444	0.9472	0.941	0.9462	0.943
			Len	12.1352	12.2360	11.8156	12.4086	11.8870
400	100	0	Cov	0.9438	0.9436	0.9168	0.9466	0.94
			Len	12.0327	11.9246	10.6653	12.5039	11.3728
400	200	0	Cov	0.938	0.9354	0.7546	0.938	0.9254
			Len	11.9645	11.6604	8.95028	12.5298	10.9654
1000	20	0	Cov	0.9504	0.9492	0.9502	0.9502	0.9502
			Len	12.4943	12.5861	12.4925	12.4925	12.4925
1000	40	0	Cov	0.944	0.9468	0.9442	0.9442	0.9442
			Len	12.2908	12.4792	12.2885	12.2885	12.2885
1000	100	0	Cov	0.9416	0.9408	0.9388	0.9404	0.9396
			Len	12.1052	12.2145	11.6997	12.2945	11.7683
1000	200	0	Cov	0.9356	0.9362	0.9254	0.9366	0.93
			Len	12.0309	11.9181	10.8027	12.3389	11.2930

Table 5.224. Etype = 5, J=20, k=1, $\psi = 1/\sqrt{p}$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.2236	Cov	0.9446	0.944	0.9316	0.944	0.9402
			Len	13.7811	13.8270	12.6646	14.1610	13.2910
100	40	0.1581	Cov	0.948	0.946	0.891	0.9512	0.9398
			Len	13.5923	13.5082	10.9944	14.0922	12.8461
100	100	0.1	Cov	0.9446	0.944	0.668	0.9474	0.9342
			Len	13.6559	13.3663	7.11218	14.1594	12.4785
100	200	0.07	Cov	0.9436	0.9412	0.4296	0.946	0.929
			Len	13.93933	13.3823	3.64792	14.376	12.3581
400	20	0.2236	Cov	0.944	0.9468	0.9442	0.9442	0.9442
			Len	12.1851	12.4768	12.1831	12.1831	12.1831
400	40	0.1581	Cov	0.946	0.9496	0.9432	0.9478	0.9434
			Len	12.1061	12.4553	11.7920	12.3216	11.8695
400	100	0.1	Cov	0.9418	0.9434	0.918	0.942	0.9346
			Len	12.0251	12.3981	10.6467	12.4267	11.3430
400	200	0.07	Cov	0.9464	0.9486	0.766	0.9478	0.933
			Len	11.9487	12.3208	8.92650	12.4592	10.9487
1000	20	0.2236	Cov	0.9442	0.9434	0.9438	0.9438	0.9438
			Len	12.4922	12.6356	12.4900	12.4900	12.4900
1000	40	0.1581	Cov	0.9438	0.9436	0.9434	0.9434	0.9434
			Len	12.3343	12.6341	12.3311	12.3311	12.3311
1000	100	0.1	Cov	0.941	0.944	0.9398	0.9424	0.94
			Len	12.1451	12.6012	11.7350	12.3088	11.8045
1000	200	0.07	Cov	0.9434	0.9454	0.9338	0.9434	0.9382
			Len	12.0933	12.5909	10.8418	12.3611	11.3286

Table 5.225. Etype = 5, J=20, k=1, $\psi = 0.9$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.9	Cov	0.9466	0.9472	0.9312	0.9484	0.941
			Len	14.3740	14.3933	12.9794	14.2333	13.6024
100	40	0.9	Cov	0.9434	0.942	0.888	0.9424	0.9362
			Len	14.6308	14.5202	11.3390	14.3684	13.3372
100	100	0.9	Cov	0.951	0.9466	0.6736	0.9474	0.9344
			Len	17.4003	14.9332	7.25929	14.8063	13.1646
100	200	0.9	Cov	0.9628	0.9466	0.451	0.9492	0.9308
			Len	30.6416	15.4294	3.69288	15.3726	13.0853
400	20	0.9	Cov	0.9448	0.9448	0.9448	0.9448	0.9448
			Len	12.5671	12.5642	12.2188	12.2188	12.2188
400	40	0.9	Cov	0.9436	0.9428	0.9396	0.9414	0.9404
			Len	12.5430	12.5368	11.7722	12.2049	11.8479
400	100	0.9	Cov	0.9402	0.9406	0.9152	0.9404	0.9326
			Len	12.5274	12.4957	10.6767	12.1922	11.3347
400	200	0.9	Cov	0.9488	0.948	0.763	0.9502	0.9328
			Len	12.6775	12.5683	9.01012	12.3050	11.0467
1000	20	0.9	Cov	0.9474	0.947	0.9464	0.9464	0.9464
			Len	12.6094	12.6073	12.4317	12.4317	12.4317
1000	40	0.9	Cov	0.9482	0.9482	0.9468	0.9468	0.9468
			Len	12.7093	12.7001	12.3349	12.3349	12.3349
1000	100	0.9	Cov	0.94	0.9408	0.9344	0.936	0.9364
			Len	12.7015	12.6629	11.7309	12.2206	11.8030
1000	200	0.9	Cov	0.9402	0.939	0.9238	0.9386	0.9328
			Len	12.6932	12.6328	10.8462	12.2145	11.3330

Table 5.226. Etype = 5, J=20, k=19, $\psi = 0$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0	Cov	0.9692	0.9508	0.9542	0.9662	0.9552
			Len	26.7461	22.2507	17.5727	25.9366	23.5148
100	40	0	Cov	0.9666	0.949	0.9058	0.9662	0.9526
			Len	25.4490	21.167	13.4587	25.6807	22.3815
100	100	0	Cov	0.9562	0.9378	0.588	0.9568	0.9372
			Len	23.9067	19.8895	7.45697	24.8144	20.9060
100	200	0	Cov	0.958	0.935	0.276	0.9588	0.9206
			Len	23.6054	19.8687	3.30138	24.306	20.0789
400	20	0	Cov	0.9662	0.9658	0.9658	0.9658	0.9658
			Len	21.2245	21.2237	21.2237	21.2237	21.2237
400	40	0	Cov	0.9674	0.967	0.963	0.968	0.9662
			Len	21.8996	21.1778	20.2705	23.1278	21.2838
400	100	0	Cov	0.9716	0.9696	0.9582	0.9722	0.9696
			Len	22.1665	20.9311	17.1206	24.9395	21.0975
400	200	0	Cov	0.9738	0.9722	0.8736	0.9734	0.973
			Len	22.4569	20.8646	12.3952	25.7576	21.0855
1000	20	0	Cov	0.9566	0.957	0.957	0.957	0.957
			Len	15.8181	15.8185	15.8185	15.8185	15.8185
1000	40	0	Cov	0.954	0.9554	0.9536	0.9536	0.9536
			Len	15.5479	15.6726	15.5372	15.5372	15.5372
1000	100	0	Cov	0.951	0.9522	0.9504	0.9514	0.951
			Len	15.4609	15.4207	14.75876	17.84504	14.9404
1000	200	0	Cov	0.957	0.9536	0.9454	0.9546	0.9512
			Len	15.3416	15.0241	13.2839	19.7442	14.30685

Table 5.227. Etype = 5, J=20, k=19, $\psi = 1/\sqrt{p}$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.2236	Cov	0.979	0.9582	0.9558	0.9668	0.9452
			Len	82.1223	24.5141	18.4304	21.1269	29.4323
100	40	0.1581	Cov	0.981	0.9474	0.9278	0.9668	0.9388
			Len	81.0446	25.2136	15.2272	23.7515	30.8728
100	100	0.1	Cov	0.981	0.929	0.7426	0.9684	0.9248
			Len	79.5267	25.4441	9.27791	26.1787	31.9061
100	200	0.07	Cov	0.9816	0.9282	0.4576	0.972	0.9178
			Len	90.1470	30.6129	5.2551	27.3502	32.0937
400	20	0.2236	Cov	0.969	0.9696	0.9696	0.9696	0.9696
			Len	21.2368	21.2336	21.2336	21.2336	21.2336
400	40	0.1581	Cov	0.9788	0.9708	0.9702	0.9732	0.9706
			Len	47.5936	20.9240	20.1480	21.7361	21.0751
400	100	0.1	Cov	0.9814	0.9666	0.954	0.9696	0.9688
			Len	57.6661	20.7397	17.0732	23.3598	20.9401
400	200	0.07	Cov	0.976	0.9656	0.875	0.9702	0.9672
			Len	61.9393	21.0080	12.4123	24.6312	20.9237
1000	20	0.2236	Cov	0.9546	0.9556	0.9556	0.9556	0.9556
			Len	15.8135	15.8114	15.8114	15.8114	15.8114
1000	40	0.1581	Cov	0.949	0.9494	0.9494	0.9494	0.9494
			Len	15.7326	15.7287	15.5534	15.5534	15.5534
1000	100	0.1	Cov	0.952	0.9528	0.9508	0.9476	0.9522
			Len	15.5047	15.5524	14.7171	16.7889	14.8867
1000	200	0.07	Cov	0.9558	0.9552	0.9444	0.9524	0.9522
			Len	15.4855	15.3984	13.3471	18.6902	14.3713

Table 5.228. Etype = 5, J=20, k=19, $\psi = 0.9$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.9	Cov	0.9746	0.9472	0.9364	0.9522	0.9462
			Len	197.046	15.9120	14.6949	16.4080	15.5760
100	40	0.9	Cov	0.9688	0.9484	0.9024	0.9518	0.9424
			Len	260.2371	15.5578	12.3149	16.2330	14.9866
100	100	0.9	Cov	0.9706	0.9478	0.687	0.9518	0.9408
			Len	457.498	14.9798	7.49291	15.9687	14.1531
100	200	0.9	Cov	0.9696	0.944	0.459	0.9534	0.9364
			Len	828.9359	14.5764	3.7482	15.7947	13.5763
400	20	0.9	Cov	0.9448	0.945	0.944	0.944	0.944
			Len	13.9510	13.4556	13.3164	13.3164	13.3164
400	40	0.9	Cov	0.95	0.9476	0.9452	0.949	0.9444
			Len	14.9919	13.4505	12.7477	13.2532	12.8385
400	100	0.9	Cov	0.954	0.9454	0.9236	0.9444	0.9406
			Len	21.3577	13.2326	11.2628	13.1178	12.1053
400	200	0.9	Cov	0.9528	0.94	0.7676	0.944	0.9294
			Len	30.1970	13.0433	9.23156	13.0590	11.5972
1000	20	0.9	Cov	0.9496	0.9486	0.9476	0.9476	0.9476
			Len	13.6659	13.3181	13.2759	13.2759	13.2759
1000	40	0.9	Cov	0.9512	0.9482	0.948	0.948	0.948
			Len	14.4213	13.3168	13.0021	13.0021	13.0021
1000	100	0.9	Cov	0.9554	0.955	0.9502	0.9534	0.9504
			Len	20.6671	13.2421	12.3075	12.8542	12.3900
1000	200	0.9	Cov	0.9522	0.9508	0.9372	0.9484	0.9448
			Len	29.5727	13.1584	11.2857	12.8217	11.8478

Table 5.229. Etype = 5, J=20, k=p-1, $\psi = 0$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	40	0	Cov	0.965	0.9352	0.9088	0.9674	0.9398
			Len	32.0211	26.3943	13.3617	31.6606	28.2460
400	40	0	Cov	0.9716	0.9594	0.965	0.9644	0.954
			Len	30.2674	23.4527	20.2547	25.9436	23.8107
1000	40	0	Cov	0.9634	0.963	0.963	0.963	0.963
			Len	19.8776	19.8771	19.8771	19.8771	19.8771
100	100	0	Cov	0.9602	0.8972	0.5454	0.962	0.908
			Len	44.0753	35.934	9.02817	44.9065	39.2053
400	100	0	Cov	0.9722	0.944	0.9578	0.9704	0.9358
			Len	45.6965	36.9923	16.8775	42.1005	37.4258
1000	100	0	Cov	0.9758	0.9538	0.9688	0.9632	0.9482
			Len	43.0666	31.0414	21.1421	33.8939	31.5194
100	200	0	Cov	0.9558	0.8916	0.2242	0.9568	0.8966
			Len	61.8802	51.7923	6.48181	61.9668	53.2870
400	200	0	Cov	0.9454	0.8908	0.7692	0.9398	0.8782
			Len	54.9273	45.5485	9.40041	52.7585	45.9309
1000	200	0	Cov	0.9756	0.9496	0.9682	0.967	0.942
			Len	62.0198	48.9369	18.8883	54.899	49.1582

Table 5.230. Etype = 5, J=20, k=p-1, $\psi = 1/\sqrt{p}$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	40	0.1581	Cov	0.9806	0.9352	0.929	0.9638	0.9306
			Len	162.9997	41.9764	15.0715	21.3063	56.9789
100	100	0.1	Cov	0.9794	0.9134	0.7442	0.9656	0.9064
			Len	398.9939	98.9748	8.4506	21.255	142.818
100	200	0.07	Cov	0.9788	0.9154	0.4836	0.967	0.895
			Len	915.1741	258.1096	4.18962	21.5494	282.4824
400	40	0.1581	Cov	0.9822	0.9676	0.9688	0.9728	0.9534
			Len	130.5839	26.6883	20.1500	21.1953	25.4847
400	100	0.1	Cov	0.9812	0.9538	0.9518	0.9654	0.914
			Len	354.1904	69.9699	17.2258	21.3045	64.2063
400	200	0.07	Cov	0.9798	0.9478	0.8634	0.966	0.8974
			Len	708.8138	143.1781	12.4314	21.2511	129.9768
1000	40	0.1581	Cov	0.969	0.9688	0.9688	0.9688	0.9688
			Len	19.8931	19.8837	19.8837	19.8837	19.8837
1000	100	0.1	Cov	0.9798	0.9682	0.97	0.9708	0.9412
			Len	264.089	40.4291	21.1711	22.2720	36.9199
1000	200	0.07	Cov	0.9796	0.9588	0.9576	0.965	0.9106
			Len	585.2276	93.4376	18.9027	22.2196	80.5964

Table 5.231. Etype = 5, J=20, k=p-1, ψ = 0.9

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	40	0.9	Cov	0.9822	0.9568	0.9258	0.9588	0.9492
			Len	640.7085	18.2809	13.9845	19.201	17.6483
400	40	0.9	Cov	0.96	0.9504	0.946	0.949	0.947
			Len	28.9787	15.2364	14.1942	14.8014	14.3008
1000	40	0.9	Cov	0.9608	0.954	0.953	0.953	0.953
			Len	27.8166	14.5247	13.9962	13.9962	13.9962
100	100	0.9	Cov	0.9844	0.9562	0.7376	0.9654	0.9316
			Len	3011.602	22.8198	8.4283	21.1857	22.3331
400	100	0.9	Cov	0.9794	0.9678	0.9472	0.962	0.9508
			Len	131.5416	22.4727	16.0763	19.7704	17.6007
1000	100	0.9	Cov	0.9688	0.9552	0.951	0.956	0.953
			Len	120.3505	20.4397	15.9403	16.7487	16.0088
100	200	0.9	Cov	0.987	0.9566	0.4982	0.9596	0.8932
			Len	10602.13	35.2473	4.1109	21.0770	35.5272
400	200	0.9	Cov	0.981	0.971	0.8686	0.9696	0.9306
			Len	476.574	33.1214	12.4462	21.2670	20.0139
1000	200	0.9	Cov	0.9802	0.9726	0.9626	0.9718	0.9622
			Len	362.6699	34.0796	18.6284	21.8626	19.1634

Table 5.232. Etype = 5, J=50, k=1, $\psi = 0$

n	p	ψ		Lasso	RL	PLS	PCR	FS
400	20	0	Cov	0.9454	0.946	0.9426	0.9466	0.9452
			Len	12.3915	12.4019	12.1823	12.6629	12.2560
400	40	0	Cov	0.9408	0.9372	0.9346	0.9422	0.9386
			Len	12.4268	12.3414	11.7999	12.7908	12.1509
400	100	0	Cov	0.948	0.9444	0.921	0.9486	0.9446
			Len	12.3182	12.1183	10.6064	12.7753	11.8644
400	200	0	Cov	0.9418	0.9436	0.7672	0.945	0.941
			Len	12.3559	12.0430	8.96905	12.8145	11.7499
1000	20	0	Cov	0.9464	0.9464	0.9466	0.9466	0.9466
			Len	12.4872	12.5728	12.4853	12.4853	12.4853
1000	40	0	Cov	0.9496	0.9502	0.9492	0.9506	0.9492
			Len	12.5241	12.5585	12.3495	12.6520	12.3843
1000	100	0	Cov	0.9456	0.9446	0.941	0.9472	0.9426
			Len	12.4088	12.3211	11.6823	12.671	12.0374
1000	200	0	Cov	0.9424	0.941	0.927	0.9438	0.9408
			Len	12.3956	12.1810	10.8006	12.6923	11.8234

Table 5.233. Etype = 5, J=50, k=1, $\psi = 1/\sqrt{p}$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.2236	Cov	0.945	0.946	0.9474	0.9472	0.9456
			Len	14.0291	13.4693	14.0331	14.1264	13.5741
400	20	0.2236	Cov	0.9466	0.9458	0.9446	0.9468	0.9442
			Len	12.4202	12.5115	12.2069	12.5933	12.2794
400	40	0.1581	Cov	0.9468	0.9474	0.9436	0.95	0.9468
			Len	12.4045	12.4702	11.7851	12.6644	12.1322
400	100	0.1	Cov	0.9426	0.943	0.9124	0.9424	0.938
			Len	12.4298	12.4560	10.6809	12.7641	11.9783
400	200	0.07	Cov	0.9436	0.9442	0.7678	0.945	0.942
			Len	12.3618	12.3536	8.9913	12.7622	11.7718
1000	20	0.2236	Cov	0.946	0.9468	0.9462	0.9462	0.9462
			Len	12.4881	12.6235	12.4858	12.4858	12.4858
1000	40	0.1581	Cov	0.9498	0.95	0.949	0.9494	0.9496
			Len	12.4717	12.6282	12.3010	12.5792	12.3340
1000	100	0.1	Cov	0.9484	0.9482	0.9464	0.9516	0.9472
			Len	12.4390	12.5986	11.7010	12.6384	12.0683
1000	200	0.07	Cov	0.9444	0.9442	0.9326	0.943	0.9412
			Len	12.4438	12.5960	10.8358	12.6945	11.8880

Table 5.234. Etype = 5, J=50, k=1, $\psi = 0.9$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.9	Cov	0.939	0.9346	0.9362	0.9362	0.9348
			Len	15.8461	13.7948	13.8648	13.8649	13.7950
100	40	0.9	Cov	0.9568	0.9494	0.9502	0.9502	0.9494
			Len	18.8093	13.6284	13.7169	13.7170	13.6289
100	100	0.9	Cov	0.9608	0.9434	0.9448	0.9448	0.945
			Len	28.3265	13.6466	13.7506	13.7507	13.6519
100	200	0.9	Cov	0.9622	0.94	0.9428	0.9428	0.9406
			Len	47.7296	13.5356	13.6894	13.6894	13.5790
400	20	0.9	Cov	0.9452	0.9452	0.9426	0.9442	0.9438
			Len	12.5598	12.557	12.2106	12.4620	12.2784
400	40	0.9	Cov	0.9444	0.9446	0.9384	0.9444	0.9414
			Len	12.5347	12.5268	11.7658	12.4213	12.1058
400	100	0.9	Cov	0.9414	0.9404	0.9156	0.9414	0.9402
			Len	13.0874	12.5568	10.6855	12.4887	11.9203
400	200	0.9	Cov	0.947	0.9458	0.7718	0.9468	0.9412
			Len	16.5664	12.6087	9.04213	12.6047	11.8836
1000	20	0.9	Cov	0.942	0.9422	0.9422	0.9422	0.9422
			Len	12.6744	12.6716	12.5019	12.5019	12.5019
1000	40	0.9	Cov	0.9478	0.9484	0.9472	0.9478	0.9474
			Len	12.5747	12.5647	12.2058	12.4113	12.2380
1000	100	0.9	Cov	0.9436	0.9438	0.9406	0.9438	0.945
			Len	12.7085	12.6726	11.7345	12.5314	12.1018
1000	200	0.9	Cov	0.9468	0.9466	0.9322	0.946	0.9428
			Len	12.6708	12.6002	10.8292	12.4865	11.8459

Table 5.235. Etype = 5, J=50, k=19, $\psi = 0$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0	Cov	0.9514	0.9302	0.9314	0.9546	0.9486
			Len	22.4408	19.1005	14.1953	23.3755	22.557
100	40	0	Cov	0.945	0.925	0.9114	0.949	0.9448
			Len	22.3771	19.0338	14.1348	23.6294	22.5347
400	20	0	Cov	0.9582	0.9548	0.9564	0.9586	0.9528
			Len	21.4165	17.3859	14.6661	19.4826	18.6547
400	40	0	Cov	0.955	0.9472	0.9466	0.9552	0.9448
			Len	21.3784	17.3824	14.0195	21.0119	18.6282
400	100	0	Cov	0.9612	0.9504	0.9354	0.9582	0.9484
			Len	21.3859	17.377	12.3024	22.0721	18.6338
400	200	0	Cov	0.9572	0.947	0.8004	0.9548	0.946
			Len	21.3747	17.3574	9.82682	22.4474	18.6098
1000	20	0	Cov	0.9568	0.9572	0.9572	0.9572	0.9572
			Len	15.7293	15.7290	15.7290	15.7290	15.7290
1000	40	0	Cov	0.9578	0.9574	0.9544	0.955	0.9584
			Len	15.9594	15.7450	15.4898	18.4663	15.7845
1000	100	0	Cov	0.96	0.9598	0.957	0.9592	0.96
			Len	16.0443	15.6778	14.5908	20.8430	15.7416
1000	200	0	Cov	0.96	0.9586	0.9478	0.9588	0.9586
			Len	16.2156	15.7517	13.2843	21.7749	15.8218

Table 5.236. Etype = 5, J=50, k=19, $\psi = 1/\sqrt{p}$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.2236	Cov	0.967	0.9264	0.9456	0.9456	0.9376
			Len	71.3109	20.1685	13.6123	13.6736	48.4832
100	40	0.1581	Cov	0.9672	0.915	0.9538	0.9544	0.9382
			Len	70.3299	20.9620	17.9783	18.1946	50.4730
100	100	0.1	Cov	0.9622	0.9	0.96	0.9606	0.9316
			Len	68.7341	21.3156	20.8167	21.0495	51.6932
100	200	0.07	Cov	0.9616	0.8892	0.9528	0.9542	0.9312
			Len	79.2503	27.7775	22.0954	22.3297	51.7552
400	20	0.2236	Cov	0.962	0.9508	0.9498	0.9528	0.9396
			Len	67.2388	16.8425	14.6483	15.0123	20.5442
400	40	0.1581	Cov	0.9646	0.9464	0.9442	0.9508	0.9382
			Len	66.2339	17.3183	14.0534	17.0587	21.6504
400	100	0.1	Cov	0.9582	0.947	0.9296	0.9536	0.935
			Len	64.8898	17.7505	12.3283	19.6662	22.6098
400	200	0.07	Cov	0.96	0.937	0.8162	0.9522	0.9376
			Len	63.4143	18.0138	9.84953	20.8815	23.1717
1000	20	0.2236	Cov	0.9572	0.9576	0.9576	0.9576	0.9576
			Len	15.7741	15.7720	15.7720	15.7720	15.7720
1000	40	0.1581	Cov	0.9572	0.9496	0.9498	0.9512	0.9502
			Len	35.2048	15.757	15.5120	16.4885	15.7958
1000	100	0.1	Cov	0.9538	0.9516	0.9492	0.9572	0.9512
			Len	45.4432	15.7392	14.6335	18.8251	15.7818
1000	200	0.07	Cov	0.9624	0.9508	0.9382	0.9508	0.9514
			Len	50.1096	15.7174	13.2299	20.2985	15.7466

Table 5.237. Etype = 5, J=50, k=19, $\psi = 0.9$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	20	0.9	Cov	0.9638	0.937	0.9384	0.9384	0.9364
			Len	230.7094	13.3178	13.6365	13.6366	14.6810
100	40	0.9	Cov	0.9656	0.941	0.9466	0.9466	0.9422
			Len	330.025	13.1917	13.7774	13.7774	14.5887
100	100	0.9	Cov	0.965	0.939	0.9476	0.9476	0.9418
			Len	524.6121	13.0188	13.9197	13.9197	14.4896
100	200	0.9	Cov	0.9706	0.9418	0.9488	0.9488	0.941
			Len	895.1404	12.8258	13.9057	13.9057	14.3035
400	20	0.9	Cov	0.954	0.9454	0.9438	0.946	0.9446
			Len	73.5905	13.4923	13.3234	13.6279	13.4219
400	40	0.9	Cov	0.9476	0.9452	0.9408	0.9472	0.9416
			Len	49.1354	13.3770	12.6882	13.5078	13.1087
400	100	0.9	Cov	0.9566	0.952	0.9274	0.9522	0.9536
			Len	128.3472	13.1759	11.2127	13.3890	12.7796
400	200	0.9	Cov	0.9524	0.948	0.7934	0.9476	0.9452
			Len	258.5456	13.052	9.25729	13.3346	12.5553
1000	20	0.9	Cov	0.9484	0.9486	0.9484	0.9484	0.9484
			Len	13.6374	13.2911	13.2469	13.2469	13.2469
1000	40	0.9	Cov	0.9476	0.9474	0.9446	0.9468	0.9448
			Len	14.4181	13.3034	12.9865	13.2167	13.0234
1000	100	0.9	Cov	0.9484	0.9458	0.939	0.9464	0.9442
			Len	20.6800	13.2587	12.3127	13.2019	12.7261
1000	200	0.9	Cov	0.9536	0.9552	0.939	0.9532	0.9502
			Len	29.585	13.2454	11.3435	13.2430	12.5434

Table 5.238. Etype = 5, J=50, k=p-1, $\psi = 0$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	40	0	Cov	0.9564	0.922	0.9142	0.9602	0.946
			Len	29.1906	24.6615	16.3614	30.7036	29.5173
400	40	0	Cov	0.9536	0.9322	0.9442	0.9488	0.9348
			Len	28.1708	23.4581	14.0222	26.735	25.3438
1000	40	0	Cov	0.9618	0.9518	0.953	0.9516	0.9456
			Len	27.1642	20.1002	15.5121	22.1381	21.3802
100	100	0	Cov	0.9584	0.8932	0.836	0.9638	0.9492
			Len	43.3244	36.0097	22.1871	46.0216	44.0343
400	100	0	Cov	0.955	0.9168	0.938	0.9534	0.93
			Len	42.1864	36.3845	12.2831	41.5593	38.9758
1000	100	0	Cov	0.955	0.9416	0.9552	0.9486	0.9354
			Len	41.6729	34.545	14.6152	38.2776	36.0727
100	200	0	Cov	0.959	0.9136	0.7464	0.9604	0.942
			Len	62.5657	54.8214	27.8363	63.7463	60.8964
400	200	0	Cov	0.951	0.9032	0.764	0.9536	0.9228
			Len	56.4717	49.3369	9.4291	56.6268	52.8048
1000	200	0	Cov	0.9538	0.9292	0.9482	0.9516	0.9272
			Len	58.2664	50.3872	13.2449	55.8671	52.1573

Table 5.239. Etype = 5, J=50, k=p-1, $\psi = 1/\sqrt{p}$

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	40	0.1581	Cov	0.9594	0.8948	0.9504	0.951	0.9328
			Len	140.8249	36.2570	13.7963	13.8747	99.8619
100	100	0.1	Cov	0.9586	0.8668	0.9438	0.9442	0.925
			Len	344.8387	85.7651	13.9712	14.0728	254.09
100	200	0.07	Cov	0.961	0.8798	0.9448	0.9452	0.9138
			Len	800.815	236.8835	14.2564	14.3753	506.5833
400	40	0.1581	Cov	0.9606	0.9426	0.9492	0.952	0.9196
			Len	132.6393	27.6932	14.0303	14.9901	40.7307
400	100	0.1	Cov	0.963	0.9242	0.933	0.9508	0.9102
			Len	325.3014	66.4774	12.2716	14.9970	106.3686
400	200	0.07	Cov	0.9568	0.911	0.8082	0.9526	0.898
			Len	637.8657	131.4207	9.8556	15.0841	215.8089
1000	40	0.1581	Cov	0.9588	0.9522	0.9546	0.9558	0.9382
			Len	129.4285	22.2859	15.4511	15.7379	23.6157
1000	100	0.1	Cov	0.9606	0.9418	0.9488	0.952	0.9148
			Len	320.4241	54.5261	14.6099	15.7492	64.2118
1000	200	0.07	Cov	0.9608	0.9316	0.9448	0.956	0.903
			Len	625.3806	108.2742	13.2463	15.7776	133.7199

Table 5.240. Etype = 5, J=50, k=p-1, ψ = 0.9

n	p	ψ		Lasso	RL	PLS	PCR	FS
100	40	0.9	Cov	0.9636	0.9364	0.9418	0.9418	0.9334
			Len	673.4568	14.0123	13.7604	13.7605	19.2659
400	40	0.9	Cov	0.9642	0.9508	0.9494	0.9512	0.951
			Len	216.3722	15.0526	14.0481	15.0189	14.5183
1000	40	0.9	Cov	0.9544	0.9484	0.9482	0.9498	0.9484
			Len	27.8141	14.5430	14.0043	14.2553	14.0299
100	100	0.9	Cov	0.9676	0.9234	0.9414	0.9414	0.9198
			Len	2732.104	18.6628	13.7253	13.7253	38.2052
400	100	0.9	Cov	0.966	0.9482	0.9234	0.9458	0.9262
			Len	1746.093	18.5674	12.2691	14.9185	17.2458
1000	100	0.9	Cov	0.963	0.958	0.952	0.9576	0.9518
			Len	120.0336	19.4086	14.6282	15.7809	15.1087
100	200	0.9	Cov	0.9678	0.9246	0.9458	0.9458	0.9092
			Len	9353.668	30.9236	13.7974	13.7974	72.3018
400	200	0.9	Cov	0.9618	0.9452	0.8094	0.9516	0.9036
			Len	6110.024	28.7512	9.85178	15.0412	27.2562
1000	200	0.9	Cov	0.9654	0.954	0.9436	0.9542	0.9274
			Len	416.8401	29.4639	13.2352	15.7431	19.0295

5.3 EBIC WITH FORWARD SELECTION

Table 5.241. Etype = 1, J=5, k=1

n	p		$\psi = 0$	$\psi = \frac{1}{\sqrt{p}}$	$\psi = 0.9$
100	20	Cov	0.9634	0.9650	0.9620
		Len	4.4384	4.4430	4.3939
100	40	Cov	0.9600	0.9618	0.9600
		Len	4.4467	4.4393	4.3791
100	100	Cov	0.9658	0.9630	0.9580
		Len	4.4396	4.4280	4.3682
100	200	Cov	0.9606	0.9652	0.9598
		Len	4.4219	4.4256	4.3427
400	20	Cov	0.9538	0.9484	0.9548
		Len	4.0071	4.0058	3.9979
400	40	Cov	0.9446	0.9538	0.9524
		Len	4.0055	4.0064	3.9944
400	100	Cov	0.9496	0.9490	0.9484
		Len	4.0080	4.0094	3.9929
400	200	Cov	0.9522	0.9534	0.9518
		Len	4.0033	4.0061	3.9870
1000	20	Cov	0.9470	0.9414	0.9496
		Len	3.9379	3.9382	3.9394
1000	40	Cov	0.9446	0.9488	0.9494
		Len	3.9367	3.9368	3.9372
1000	100	Cov	0.9464	0.9512	0.9494
		Len	3.9349	3.9352	3.9336
1000	200	Cov	0.9506	0.9528	0.9530
		Len	3.9344	3.9393	3.9352

Table 5.242. Etype = 1, J=5, k=19

n	p		$\psi = 0$	$\psi = \frac{1}{\sqrt{p}}$	$\psi = 0.9$
100	20	Cov	0.9832	0.9862	0.9616
		Len	5.7094	5.7056	5.1729
100	40	Cov	0.9796	0.9706	0.9516
		Len	5.9440	6.7200	5.1444
100	100	Cov	0.9680	0.9306	0.9334
		Len	6.6805	8.7804	5.0738
100	200	Cov	0.9392	0.8760	0.9110
		Len	8.3810	10.4374	4.9965
400	20	Cov	0.9758	0.9792	0.9634
		Len	4.6929	4.6887	4.4468
400	40	Cov	0.9756	0.9702	0.9502
		Len	4.6857	4.6855	4.4108
400	100	Cov	0.9746	0.9736	0.9388
		Len	4.6774	4.6791	4.3971
400	200	Cov	0.9756	0.9708	0.9414
		Len	4.6730	4.6753	4.3848
1000	20	Cov	0.9604	0.9662	0.9610
		Len	4.1742	4.1791	4.1663
1000	40	Cov	0.9602	0.9578	0.9554
		Len	4.1781	4.1782	4.1481
1000	100	Cov	0.9592	0.9580	0.9562
		Len	4.1775	4.1778	4.1539
1000	200	Cov	0.9598	0.9576	0.9504
		Len	4.1739	4.1783	4.1495

Table 5.243. Etype = 1, J=5, k=p-1

n	p		$\psi = 0$	$\psi = \frac{1}{\sqrt{p}}$	$\psi = 0.9$
100	40	Cov	0.9040	0.8858	0.9278
		Len	17.4837	19.4947	5.4377
100	100	Cov	0.9394	0.8000	0.8230
		Len	40.6694	50.2127	6.8075
100	200	Cov	0.9452	0.7186	0.7248
		Len	58.9667	92.8953	10.7159
400	40	Cov	0.9792	0.9824	0.9614
		Len	4.8971	4.9038	4.8126
400	100	Cov	0.9252	0.9212	0.9366
		Len	17.7642	17.8330	5.2853
400	200	Cov	0.9384	0.8320	0.8642
		Len	53.8183	48.1354	6.4799
1000	40	Cov	0.9696	0.9710	0.9702
		Len	4.4919	4.4908	4.4896
1000	100	Cov	0.9764	0.9748	0.9790
		Len	4.8752	4.8825	4.8765
1000	200	Cov	0.9826	0.9800	0.9826
		Len	5.2696	5.2731	5.2713

Table 5.244. Etype = 1, J=10, k=1

n	p		$\psi = 0$	$\psi = \frac{1}{\sqrt{p}}$	$\psi = 0.9$
100	20	Cov	0.9604	0.9624	0.9624
		Len	4.4339	4.4318	4.3948
100	40	Cov	0.9698	0.9662	0.9604
		Len	4.4355	4.4405	4.3845
100	100	Cov	0.9578	0.9660	0.9570
		Len	4.4308	4.4335	4.3642
100	200	Cov	0.9656	0.9658	0.9598
		Len	4.4277	4.4156	4.3535
400	20	Cov	0.9472	0.9524	0.9522
		Len	4.0059	4.0037	4.0035
400	40	Cov	0.9548	0.9524	0.9510
		Len	4.0080	4.0076	3.9983
400	100	Cov	0.9534	0.9542	0.9488
		Len	4.0051	4.0045	3.9888
400	200	Cov	0.9538	0.9464	0.9470
		Len	4.0063	4.0012	3.9887
1000	20	Cov	0.9544	0.9430	0.9474
		Len	3.9383	3.9376	3.9375
1000	40	Cov	0.9546	0.9526	0.9470
		Len	3.9342	3.9372	3.9358
1000	100	Cov	0.9526	0.9514	0.9554
		Len	3.9366	3.9363	3.9382
1000	200	Cov	0.9522	0.9442	0.9482
		Len	3.9381	3.9394	3.9323

Table 5.245. Etype = 1, J=10, k=19

n	p		$\psi = 0$	$\psi = \frac{1}{\sqrt{p}}$	$\psi = 0.9$
100	20	Cov	0.9430	0.9378	0.9614
		Len	13.8313	14.6745	5.1656
100	40	Cov	0.9398	0.9310	0.9564
		Len	13.8426	16.1301	5.1360
100	100	Cov	0.9412	0.9008	0.9270
		Len	14.1143	17.6116	5.0754
100	200	Cov	0.9356	0.8792	0.9178
		Len	15.1546	18.1522	4.9902
400	20	Cov	0.9772	0.9750	0.9592
		Len	4.6990	4.6969	4.4438
400	40	Cov	0.9750	0.9752	0.9534
		Len	4.6780	4.6868	4.4024
400	100	Cov	0.9712	0.9740	0.9448
		Len	4.6775	4.6791	4.3971
400	200	Cov	0.9718	0.9768	0.9398
		Len	4.6717	4.6784	4.3855
1000	20	Cov	0.9554	0.9598	0.9600
		Len	4.1766	4.1744	4.1701
1000	40	Cov	0.9612	0.9542	0.9498
		Len	4.1784	4.1763	4.1534
1000	100	Cov	0.9580	0.9584	0.9536
		Len	4.1768	4.1751	4.1520
1000	200	Cov	0.9642	0.9564	0.9482
		Len	4.1754	4.1760	4.1601

Table 5.246. Etype = 1, J=10, k=p-1

n	p		$\psi = 0$	$\psi = \frac{1}{\sqrt{p}}$	$\psi = 0.9$
100	40	Cov	0.9318	0.9044	0.9302
		Len	22.7023	33.5587	5.8339
100	100	Cov	0.9378	0.8650	0.8748
		Len	41.0337	85.7560	10.5333
100	200	Cov	0.9484	0.8184	0.8394
		Len	58.8774	166.1195	19.0490
400	40	Cov	0.9786	0.9774	0.9644
		Len	4.9071	4.9084	4.8114
400	100	Cov	0.9118	0.8966	0.9274
		Len	28.7049	37.9356	5.8302
400	200	Cov	0.9318	0.8570	0.8648
		Len	54.0818	80.8306	9.4875
1000	40	Cov	0.9756	0.9694	0.9680
		Len	4.4868	4.4878	4.4828
1000	100	Cov	0.9816	0.9772	0.9760
		Len	4.8849	4.8815	4.8837
1000	200	Cov	0.9296	0.9028	0.9222
		Len	37.1150	46.3527	6.4369

Table 5.247. Etype = 1, J=20, k=1

n	p		$\psi = 0$	$\psi = \frac{1}{\sqrt{p}}$	$\psi = 0.9$
100	20	Cov	0.9682	0.9620	0.9636
		Len	4.4329	4.4406	4.3942
100	40	Cov	0.9652	0.9658	0.9606
		Len	4.4356	4.4303	4.3804
100	100	Cov	0.9720	0.9614	0.9646
		Len	4.4291	4.4402	4.3561
100	200	Cov	0.9626	0.9662	0.9532
		Len	4.4333	4.4293	4.3477
400	20	Cov	0.9530	0.9482	0.9494
		Len	4.0002	4.0033	3.9947
400	40	Cov	0.9486	0.9434	0.9570
		Len	4.0051	4.0048	3.9959
400	100	Cov	0.9496	0.9502	0.9482
		Len	4.0051	4.0055	3.9916
400	200	Cov	0.9490	0.9502	0.9490
		Len	4.0055	4.0100	3.9884
1000	20	Cov	0.9494	0.9500	0.9490
		Len	3.9386	3.9355	3.9365
1000	40	Cov	0.9502	0.9472	0.9494
		Len	3.9375	3.9387	3.9357
1000	100	Cov	0.9522	0.9488	0.9464
		Len	3.9368	3.9363	3.9340
1000	200	Cov	0.9484	0.9490	0.9516
		Len	3.9348	3.9339	3.9342

Table 5.248. Etype = 1, J=20, k=19

n	p		$\psi = 0$	$\psi = \frac{1}{\sqrt{p}}$	$\psi = 0.9$
100	20	Cov	0.9590	0.9462	0.9582
		Len	17.3245	25.3737	5.5360
100	40	Cov	0.9576	0.9318	0.9468
		Len	17.2694	27.2703	5.4740
100	100	Cov	0.9424	0.9186	0.9344
		Len	17.2460	28.7491	5.3451
100	200	Cov	0.9490	0.9112	0.9198
		Len	17.4097	29.2283	5.2282
400	20	Cov	0.9804	0.9756	0.9628
		Len	4.6963	4.6967	4.4438
400	40	Cov	0.9758	0.9760	0.9568
		Len	4.6932	4.7545	4.4133
400	100	Cov	0.9808	0.9698	0.9470
		Len	4.6941	4.8947	4.3922
400	200	Cov	0.9770	0.9752	0.9380
		Len	4.6946	5.1311	4.3772
1000	20	Cov	0.9584	0.9604	0.9612
		Len	4.1761	4.1755	4.1741
1000	40	Cov	0.9628	0.9542	0.9576
		Len	4.1765	4.1773	4.1553
1000	100	Cov	0.9640	0.9602	0.9552
		Len	4.1771	4.1751	4.1516
1000	200	Cov	0.9630	0.9594	0.9462
		Len	4.1784	4.1763	4.1563

Table 5.249. Etype = 1, J=20, k=p-1

n	p		$\psi = 0$	$\psi = \frac{1}{\sqrt{p}}$	$\psi = 0.9$
100	40	Cov	0.9508	0.9298	0.9284
		Len	25.6545	55.3481	8.0655
400	40	Cov	0.9476	0.9348	0.9636
		Len	18.0978	20.8497	4.9484
1000	40	Cov	0.9648	0.9702	0.9704
		Len	4.4897	4.4889	4.4867
100	100	Cov	0.9430	0.9128	0.9162
		Len	41.5219	142.7038	17.5271
400	100	Cov	0.9320	0.9142	0.9190
		Len	34.8639	62.8941	8.0764
1000	100	Cov	0.9760	0.9324	0.9430
		Len	4.8837	34.1218	5.6318
100	200	Cov	0.9486	0.8976	0.8886
		Len	59.1332	282.1866	33.3948
400	200	Cov	0.9346	0.8826	0.8976
		Len	54.1671	129.3459	14.6696
1000	200	Cov	0.9290	0.9088	0.9136
		Len	47.1483	79.6519	9.4535

Table 5.250. Etype = 1, J=50, k=1

n	p		$\psi = 0$	$\psi = \frac{1}{\sqrt{p}}$	$\psi = 0.9$
100	20	Cov	0.9670	0.9654	0.9640
		Len	4.4394	4.4388	4.3859
100	40	Cov	0.9624	0.9638	0.9568
		Len	4.4328	4.4311	4.3819
100	100	Cov	0.9706	0.9596	0.9602
		Len	4.4459	4.4376	4.3695
100	200	Cov	0.9656	0.9658	0.9600
		Len	4.4495	4.4356	4.3609
400	20	Cov	0.9558	0.9502	0.9456
		Len	4.0082	4.0044	4.0015
400	40	Cov	0.9528	0.9518	0.9430
		Len	4.0060	4.0042	3.9947
400	100	Cov	0.9492	0.9504	0.9452
		Len	4.0042	4.0051	3.9912
400	200	Cov	0.9554	0.9494	0.9438
		Len	4.0020	4.0052	3.9906
1000	20	Cov	0.9504	0.9506	0.9500
		Len	3.9387	3.9371	3.9347
1000	40	Cov	0.9462	0.9526	0.9478
		Len	3.9363	3.9380	3.9332
1000	100	Cov	0.9492	0.9440	0.9508
		Len	3.9376	3.9370	3.9348
1000	200	Cov	0.9486	0.9554	0.9508
		Len	3.9362	3.9382	3.9323

Table 5.251. Etype = 1, J=50, k=19

n	p	$\psi = 0$	$\psi = \frac{1}{\sqrt{p}}$	$\psi = 0.9$	
100	20	Cov	0.9502	0.9380	0.9406
		Len	18.3207	46.7607	8.1380
100	40	Cov	0.9494	0.9400	0.9314
		Len	18.3136	48.9391	8.0488
100	100	Cov	0.9494	0.9308	0.9314
		Len	18.2962	50.1546	7.9676
100	200	Cov	0.9542	0.9268	0.9176
		Len	18.3149	50.2308	7.8539
400	20	Cov	0.9386	0.9282	0.9472
		Len	13.7495	16.5096	4.4899
400	40	Cov	0.9352	0.9306	0.9430
		Len	13.7694	17.8209	4.4909
400	100	Cov	0.9362	0.9306	0.9386
		Len	13.7644	18.9651	4.4795
400	200	Cov	0.9448	0.9232	0.9298
		Len	13.7507	19.6209	4.4653
1000	20	Cov	0.9562	0.9640	0.9588
		Len	4.1748	4.1775	4.1692
1000	40	Cov	0.9612	0.9620	0.9574
		Len	4.1742	4.1777	4.1565
1000	100	Cov	0.9560	0.9606	0.9482
		Len	4.1773	4.1842	4.1551
1000	200	Cov	0.9612	0.9648	0.9506
		Len	4.1772	4.1840	4.1547

Table 5.252. Etype = 1, J=50, k=p-1

n	p		$\psi = 0$	$\psi = \frac{1}{\sqrt{p}}$	$\psi = 0.9$
100	40	Cov	0.9502	0.9364	0.9350
		Len	26.2609	99.0403	14.9842
400	40	Cov	0.9284	0.9196	0.9184
		Len	21.8629	38.8563	6.0584
1000	40	Cov	0.9374	0.9284	0.9424
		Len	17.2327	20.0686	4.5960
100	100	Cov	0.9498	0.9272	0.9236
		Len	41.9417	253.7439	36.3098
400	100	Cov	0.9384	0.9048	0.8980
		Len	36.9146	105.7099	12.8067
1000	100	Cov	0.9362	0.9080	0.9164
		Len	33.7181	63.1281	8.0172
100	200	Cov	0.9474	0.9224	0.9192
		Len	59.1702	506.6544	71.5347
400	200	Cov	0.9386	0.8936	0.8950
		Len	54.5270	215.5089	24.7068
1000	200	Cov	0.9336	0.9044	0.9056
		Len	50.6054	133.2647	15.0494

Table 5.253. Etype = 2, J=5, k=1

n	p		$\psi = 0$	$\psi = \frac{1}{\sqrt{p}}$	$\psi = 0.9$
100	20	Cov	0.9564	0.9538	0.9496
		Len	7.2198	7.2275	7.1927
100	40	Cov	0.9510	0.9578	0.9504
		Len	7.2597	7.2496	7.1912
100	100	Cov	0.9492	0.9534	0.9462
		Len	7.2354	7.2028	7.1998
100	200	Cov	0.9490	0.9496	0.9500
		Len	7.2521	7.2308	7.1480
400	20	Cov	0.9470	0.9446	0.9454
		Len	6.4632	6.4483	6.4468
400	40	Cov	0.9516	0.9520	0.9458
		Len	6.4629	6.4492	6.4404
400	100	Cov	0.9528	0.9460	0.9496
		Len	6.4616	6.4504	6.4514
400	200	Cov	0.9494	0.9454	0.9440
		Len	6.4509	6.4768	6.4113
1000	20	Cov	0.9482	0.9500	0.9466
		Len	6.3494	6.3564	6.3449
1000	40	Cov	0.9454	0.9438	0.9430
		Len	6.3465	6.3578	6.3420
1000	100	Cov	0.9480	0.9498	0.9480
		Len	6.3603	6.3612	6.3478
1000	200	Cov	0.9550	0.9482	0.9438
		Len	6.3571	6.3606	6.3464

Table 5.254. Etype = 2, J=5, k=19

n	p		$\psi = 0$	$\psi = \frac{1}{\sqrt{p}}$	$\psi = 0.9$
100	20	Cov	0.9760	0.9780	0.9620
		Len	10.0696	10.0334	8.2869
100	40	Cov	0.9726	0.9676	0.9520
		Len	10.0310	10.0748	8.0663
100	100	Cov	0.9700	0.9712	0.9420
		Len	10.3542	10.0511	7.8225
100	200	Cov	0.9612	0.9692	0.9316
		Len	11.2014	10.2027	7.6814
400	20	Cov	0.9712	0.9754	0.9532
		Len	8.4250	8.4276	6.9967
400	40	Cov	0.9688	0.9714	0.9488
		Len	8.3983	8.3948	6.9465
400	100	Cov	0.9698	0.9738	0.9398
		Len	8.3662	8.3874	6.9018
400	200	Cov	0.9738	0.9710	0.9414
		Len	8.3995	8.4170	6.8531
1000	20	Cov	0.9580	0.9606	0.9560
		Len	6.9778	6.9918	6.7105
1000	40	Cov	0.9598	0.9572	0.9518
		Len	7.0023	7.0053	6.6845
1000	100	Cov	0.9606	0.9530	0.9506
		Len	6.9960	6.9858	6.6595
1000	200	Cov	0.9590	0.9622	0.9470
		Len	6.9924	6.9981	6.6346

Table 5.255. Etype = 2, J=5, k=p-1

n	p		$\psi = 0$	$\psi = \frac{1}{\sqrt{p}}$	$\psi = 0.9$
100	40	Cov	0.9098	0.9060	0.9490
		Len	18.8294	20.3581	8.7305
400	40	Cov	0.9720	0.9720	0.9536
		Len	8.7203	8.7201	7.6968
1000	40	Cov	0.9732	0.9710	0.9538
		Len	7.8911	7.9020	7.1201
100	100	Cov	0.9300	0.8096	0.8702
		Len	41.0859	50.5781	9.1799
400	100	Cov	0.9288	0.9202	0.9394
		Len	18.8219	18.8528	8.5608
1000	100	Cov	0.9730	0.9722	0.9668
		Len	8.7675	8.7732	8.3899
100	200	Cov	0.9490	0.7192	0.7474
		Len	59.2288	93.0165	11.7748
400	200	Cov	0.9190	0.9062	0.9354
		Len	19.2643	21.6358	8.6117
1000	200	Cov	0.9748	0.9752	0.9502
		Len	9.3328	9.3402	8.8941

Table 5.256. Etype = 2, J=10, k=1

n	p		$\psi = 0$	$\psi = \frac{1}{\sqrt{p}}$	$\psi = 0.9$
100	20	Cov	0.9610	0.9530	0.9532
		Len	7.2671	7.2015	7.1787
100	40	Cov	0.9544	0.9566	0.9592
		Len	7.2525	7.1782	7.1502
100	100	Cov	0.9548	0.9560	0.9482
		Len	7.2069	7.2400	7.1713
100	200	Cov	0.9568	0.9522	0.9448
		Len	7.2377	7.2345	7.1369
400	20	Cov	0.9512	0.9546	0.9466
		Len	6.4611	6.4520	6.4439
400	40	Cov	0.9528	0.9460	0.9482
		Len	6.4646	6.4508	6.4469
400	100	Cov	0.9512	0.9458	0.9512
		Len	6.4594	6.4451	6.4296
400	200	Cov	0.9478	0.9480	0.9490
		Len	6.4549	6.4418	6.4386
1000	20	Cov	0.9506	0.9520	0.9502
		Len	6.3530	6.3557	6.3470
1000	40	Cov	0.9462	0.9510	0.9530
		Len	6.3529	6.3640	6.3433
1000	100	Cov	0.9398	0.9526	0.9448
		Len	6.3599	6.3640	6.3486
1000	200	Cov	0.9514	0.9456	0.9492
		Len	6.3588	6.3639	6.3435

Table 5.257. Etype = 2, J=10, k=19

n	p		$\psi = 0$	$\psi = \frac{1}{\sqrt{p}}$	$\psi = 0.9$
100	20	Cov	0.9506	0.9404	0.9552
		Len	15.2142	15.8700	8.3033
100	40	Cov	0.9454	0.9340	0.9542
		Len	15.2739	17.2104	8.1063
100	100	Cov	0.9380	0.9040	0.9362
		Len	15.9292	18.4827	7.8094
100	200	Cov	0.9400	0.8744	0.9316
		Len	17.0700	18.9969	7.6465
400	20	Cov	0.9720	0.9712	0.9482
		Len	8.4313	8.4339	6.9988
400	40	Cov	0.9746	0.9744	0.9492
		Len	8.3977	8.4271	6.9512
400	100	Cov	0.9732	0.9662	0.9516
		Len	8.3930	8.4114	6.9030
400	200	Cov	0.9706	0.9726	0.9422
		Len	8.3749	8.4094	6.8542
1000	20	Cov	0.9550	0.9588	0.9524
		Len	6.9917	6.9827	6.7091
1000	40	Cov	0.9594	0.9616	0.9522
		Len	7.0148	6.9977	6.6673
1000	100	Cov	0.9596	0.9550	0.9482
		Len	7.0045	6.9978	6.6514
1000	200	Cov	0.9558	0.9618	0.9408
		Len	6.9954	6.9947	6.6377

Table 5.258. Etype = 2, J=10, k=p-1

n	p		$\psi = 0$	$\psi = \frac{1}{\sqrt{p}}$	$\psi = 0.9$
100	40	Cov	0.9264	0.9108	0.9422
		Len	23.7779	33.9659	8.7436
400	40	Cov	0.9762	0.9722	0.9526
		Len	8.7409	8.7269	7.6865
1000	40	Cov	0.9686	0.9654	0.9574
		Len	7.8983	7.9072	7.1144
100	100	Cov	0.9424	0.8632	0.8776
		Len	41.4014	85.8916	11.7993
400	100	Cov	0.9166	0.9030	0.9422
		Len	29.3077	38.3416	8.5978
1000	100	Cov	0.9742	0.9732	0.9636
		Len	8.8007	8.7906	8.3915
100	200	Cov	0.9420	0.8288	0.8248
		Len	59.2734	166.2737	19.6584
400	200	Cov	0.9390	0.8508	0.8978
		Len	54.3612	80.9983	10.8268
1000	200	Cov	0.9246	0.9050	0.9484
		Len	37.5619	46.6793	8.9576

Table 5.259. Etype = 2, J=20, k=1

n	p		$\psi = 0$	$\psi = \frac{1}{\sqrt{p}}$	$\psi = 0.9$
100	20	Cov	0.9562	0.9522	0.9562
		Len	7.2348	7.2008	7.1770
100	40	Cov	0.9556	0.9506	0.9520
		Len	7.2390	7.2243	7.1580
100	100	Cov	0.9526	0.9526	0.9528
		Len	7.1813	7.1877	7.1502
100	200	Cov	NA	0.9510	0.9562
		Len	NA	7.1938	7.1569
400	20	Cov	0.9460	0.9456	0.9442
		Len	6.4636	6.4492	6.4270
400	40	Cov	0.9502	0.9468	0.9428
		Len	6.4620	6.4675	6.4359
400	100	Cov	0.9432	0.9466	0.9494
		Len	6.4593	6.4515	6.4400
400	200	Cov	0.9504	0.9452	0.9480
		Len	6.4558	6.4509	6.4281
1000	20	Cov	0.9482	0.9566	0.9444
		Len	6.3591	6.3552	6.3503
1000	40	Cov	0.9492	0.9478	0.9462
		Len	6.3643	6.3635	6.3531
1000	100	Cov	0.9478	0.9456	0.9486
		Len	6.3639	6.3515	6.3381
1000	200	Cov	0.9414	0.9478	0.9420
		Len	6.3574	6.3628	6.3423

Table 5.260. Etype = 2, J=20, k=19

n	p		$\psi = 0$	$\psi = \frac{1}{\sqrt{p}}$	$\psi = 0.9$
100	20	Cov	0.9544	0.9400	0.9574
		Len	18.4259	26.1005	8.3027
100	40	Cov	0.9538	0.9410	0.9490
		Len	18.4030	27.9565	8.0949
100	100	Cov	0.9486	0.9232	0.9464
		Len	18.3614	29.3061	7.8209
100	200	Cov	0.9470	0.9066	0.9388
		Len	18.4335	29.7058	7.6764
400	20	Cov	0.9732	0.9762	0.9494
		Len	8.4337	8.4175	7.0005
400	40	Cov	0.9720	0.9724	0.9498
		Len	8.4209	8.4301	6.9515
400	100	Cov	0.9664	0.9708	0.9490
		Len	8.4559	8.4262	6.9046
400	200	Cov	0.9722	0.9700	0.9434
		Len	8.4352	8.4433	6.8591
1000	20	Cov	0.9584	0.9564	0.9540
		Len	6.9992	6.9848	6.7019
1000	40	Cov	0.9596	0.9608	0.9524
		Len	6.9914	6.9957	6.6789
1000	100	Cov	0.9576	0.9546	0.9500
		Len	7.0107	7.0003	6.6597
1000	200	Cov	0.9578	0.9588	0.9422
		Len	6.9970	6.9960	6.6366

Table 5.261. Etype = 2, J=20, k=p-1

n	p		$\psi = 0$	$\psi = \frac{1}{\sqrt{p}}$	$\psi = 0.9$
100	40	Cov	0.9522	0.9274	0.9424
		Len	26.3543	55.6385	9.9646
400	40	Cov	0.9378	0.9314	0.9564
		Len	19.0416	21.6264	7.7040
1000	40	Cov	0.9712	0.9648	0.9558
		Len	7.8967	7.9038	7.1171
100	100	Cov	0.9458	0.9114	0.9176
		Len	41.8971	142.5211	18.3060
400	100	Cov	0.9340	0.9068	0.9352
		Len	35.3779	63.1102	9.7697
1000	100	Cov	0.9464	0.9338	0.9602
		Len	28.4479	34.5788	8.4358
100	200	Cov	0.9426	0.8914	0.8882
		Len	59.3888	281.9183	33.8312
400	200	Cov	0.9406	0.8930	0.9060
		Len	54.4805	129.7019	15.5431
1000	200	Cov	0.9248	0.9086	0.9292
		Len	47.5347	79.8276	10.9373

Table 5.262. Etype = 2, J=50, k=1

n	p		$\psi = 0$	$\psi = \frac{1}{\sqrt{p}}$	$\psi = 0.9$
100	20	Cov	NA	0.9504	0.9552
		Len	NA	7.2338	7.1482
100	40	Cov	NA	0.9538	0.9544
		Len	NA	7.2221	7.1184
100	100	Cov	NA	0.9544	0.9520
		Len	NA	7.2312	7.1037
100	200	Cov	NA	0.9504	0.9490
		Len	NA	7.1983	7.1735
400	20	Cov	0.9462	0.9486	0.9522
		Len	6.4725	6.4550	6.4490
400	40	Cov	0.9552	0.9512	0.9518
		Len	6.4736	6.4649	6.4301
400	100	Cov	0.9486	0.9450	0.9500
		Len	6.4714	6.4455	6.4285
400	200	Cov	0.9486	0.9500	0.9486
		Len	6.4481	6.4582	6.4257
1000	20	Cov	0.9502	0.9466	0.9500
		Len	6.3548	6.3587	6.3505
1000	40	Cov	0.9468	0.9494	0.9444
		Len	6.3588	6.3555	6.3567
1000	100	Cov	0.9474	0.9500	0.9446
		Len	6.3593	6.3575	6.3504
1000	200	Cov	0.9456	0.9490	0.9436
		Len	6.3614	6.3531	6.3485

Table 5.263. Etype = 2, J=50, k=19

n	p		$\psi = 0$	$\psi = \frac{1}{\sqrt{p}}$	$\psi = 0.9$
100	20	Cov	0.9516	0.9418	0.9396
		Len	19.1533	47.1172	9.5797
100	40	Cov	0.9488	0.9420	0.9376
		Len	19.1771	49.2083	9.5258
100	100	Cov	0.9522	0.9302	0.9330
		Len	19.1606	50.3659	9.3648
100	200	Cov	NA	0.9266	0.9278
		Len	NA	50.4854	9.2164
400	20	Cov	0.9406	0.9372	0.9454
		Len	14.7175	17.2978	6.9715
400	40	Cov	0.9396	0.9354	0.9480
		Len	14.7266	18.5329	6.9556
400	100	Cov	0.9404	0.9378	0.9450
		Len	14.7204	19.6616	6.8989
400	200	Cov	0.9440	0.9274	0.9420
		Len	14.7158	20.2760	6.8734
1000	20	Cov	0.9574	0.9580	0.9502
		Len	6.9919	6.9872	6.7053
1000	40	Cov	0.9560	0.9548	0.9478
		Len	6.9927	6.9955	6.6888
1000	100	Cov	0.9594	0.9570	0.9424
		Len	6.9878	6.9887	6.6603
1000	200	Cov	0.9564	0.9588	0.9406
		Len	7.0092	6.9924	6.6436

Table 5.264. Etype = 2, J=50, k=p-1

n	p		$\psi = 0$	$\psi = \frac{1}{\sqrt{p}}$	$\psi = 0.9$
100	40	Cov	0.9538	0.9312	0.9338
		Len	26.8942	99.2809	15.8398
400	40	Cov	0.9348	0.9194	0.9374
		Len	22.5364	39.1995	7.8289
1000	40	Cov	0.9360	0.9286	0.9528
		Len	18.0250	20.7333	7.0529
100	100	Cov	0.9520	0.9286	0.9222
		Len	42.3064	254.2178	36.5661
400	100	Cov	0.9294	0.9014	0.9140
		Len	37.3130	105.7312	13.6985
1000	100	Cov	0.9396	0.9158	0.9344
		Len	34.1379	63.2724	9.3894
100	200	Cov	0.9506	0.9262	0.9244
		Len	59.7265	506.5613	71.5173
400	200	Cov	0.9370	0.8896	0.8974
		Len	54.7432	215.6005	25.1643
1000	200	Cov	0.9264	0.8978	0.9122
		Len	50.9035	133.2922	15.8057

Table 5.265. Etype = 3, J=5, k=1

n	p		$\psi = 0$	$\psi = \frac{1}{\sqrt{p}}$	$\psi = 0.9$
100	20	Cov	0.9612	0.9646	0.9578
		Len	3.7945	3.7679	3.8340
100	40	Cov	0.9624	0.9634	0.9648
		Len	3.7741	3.7681	3.8388
100	100	Cov	0.9618	0.9662	0.9608
		Len	3.7837	3.7770	3.8520
100	200	Cov	0.9646	0.9610	0.9566
		Len	3.7816	3.7656	3.8651
400	20	Cov	0.9562	0.9556	0.9510
		Len	3.2180	3.2105	3.2729
400	40	Cov	0.9578	0.9576	0.9496
		Len	3.2167	3.2142	3.2913
400	100	Cov	0.9564	0.9596	0.9468
		Len	3.2142	3.2166	3.3162
400	200	Cov	0.9498	0.9522	0.9494
		Len	3.2130	3.2136	3.3201
1000	20	Cov	0.9528	0.9488	0.9524
		Len	3.0971	3.0988	3.1190
1000	40	Cov	0.9506	0.9534	0.9522
		Len	3.0988	3.0992	3.1343
1000	100	Cov	0.9518	0.9486	0.9502
		Len	3.0978	3.0953	3.1499
1000	200	Cov	0.9530	0.9498	0.9484
		Len	3.0976	3.1002	3.1649

Table 5.266. Etype = 3, J=5, k=19

n	p		$\psi = 0$	$\psi = \frac{1}{\sqrt{p}}$	$\psi = 0.9$
100	20	Cov	0.9778	0.9834	0.9576
		Len	5.6294	5.6451	5.2388
100	40	Cov	0.9782	0.9674	0.9498
		Len	5.9242	6.6955	5.2174
100	100	Cov	0.9690	0.9378	0.9392
		Len	6.7217	8.8035	5.1545
100	200	Cov	0.9412	0.8788	0.9190
		Len	8.4551	10.4310	5.0499
400	20	Cov	0.9756	0.9756	0.9570
		Len	4.3314	4.3278	4.1679
400	40	Cov	0.9728	0.9744	0.9542
		Len	4.3384	4.3435	4.2074
400	100	Cov	0.9708	0.9752	0.9482
		Len	4.3399	4.3523	4.2441
400	200	Cov	0.9752	0.9744	0.9452
		Len	4.3357	4.3480	4.2610
1000	20	Cov	0.9598	0.9596	0.9582
		Len	3.5601	3.5606	3.5657
1000	40	Cov	0.9578	0.9604	0.9526
		Len	3.5707	3.5722	3.6925
1000	100	Cov	0.9592	0.9574	0.9554
		Len	3.5653	3.5739	3.7609
1000	200	Cov	0.9600	0.9608	0.9460
		Len	3.5675	3.5706	3.7959

Table 5.267. Etype = 3, J=5, k=p-1

n	p		$\psi = 0$	$\psi = \frac{1}{\sqrt{p}}$	$\psi = 0.9$
100	40	Cov	0.9068	0.8876	0.9374
		Len	17.4717	19.4589	5.5039
400	40	Cov	0.9760	0.9754	0.9660
		Len	4.6697	4.6777	4.7592
1000	40	Cov	0.9706	0.9684	0.9674
		Len	4.0441	4.0353	4.0387
100	100	Cov	0.9366	0.7986	0.8118
		Len	40.6862	50.2978	6.8339
400	100	Cov	0.9116	0.9272	0.9408
		Len	17.7940	17.8558	5.3550
1000	100	Cov	0.9800	0.9774	0.9776
		Len	4.6590	4.6526	4.6559
100	200	Cov	0.9422	0.7270	0.7302
		Len	58.9611	92.9103	10.7338
400	200	Cov	0.9062	0.8964	0.9176
		Len	18.1816	20.8019	5.5971
1000	200	Cov	0.9778	0.9766	0.9774
		Len	5.2097	5.2074	5.2125

Table 5.268. Etype = 3, J=10, k=1

n	p		$\psi = 0$	$\psi = \frac{1}{\sqrt{p}}$	$\psi = 0.9$
100	20	Cov	0.9660	0.9650	0.9596
		Len	3.7766	3.7956	3.8254
100	40	Cov	0.9606	0.9644	0.9642
		Len	3.7798	3.7824	3.8398
100	100	Cov	0.9578	0.9618	0.9596
		Len	3.7810	3.7811	3.8588
100	200	Cov	0.9626	0.9596	0.9626
		Len	3.7755	3.7595	3.8713
400	20	Cov	0.9520	0.9564	0.9506
		Len	3.2191	3.2168	3.2789
400	40	Cov	0.9522	0.9542	0.9472
		Len	3.2089	3.2135	3.3014
400	100	Cov	0.9560	0.9512	0.9472
		Len	3.2138	3.2172	3.3121
400	200	Cov	0.9554	0.9506	0.9438
		Len	3.2155	3.2144	3.3270
1000	20	Cov	0.9484	0.9524	0.9524
		Len	3.0986	3.1004	3.1209
1000	40	Cov	0.9548	0.9498	0.9554
		Len	3.1024	3.1019	3.1316
1000	100	Cov	0.9502	0.9482	0.9504
		Len	3.0960	3.0969	3.1515
1000	200	Cov	0.9530	0.9530	0.9528
		Len	3.1002	3.1016	3.1663

Table 5.269. Etype = 3, J=10, k=19

n	p		$\psi = 0$	$\psi = \frac{1}{\sqrt{p}}$	$\psi = 0.9$
100	20	Cov	0.9398	0.9410	0.9606
		Len	13.8277	14.7297	5.2228
100	40	Cov	0.9434	0.9290	0.9492
		Len	13.8467	16.1603	5.2057
100	100	Cov	0.9334	0.9070	0.9344
		Len	14.1469	17.6214	5.1447
100	200	Cov	0.9328	0.8740	0.9264
		Len	15.1591	18.1632	5.0548
400	20	Cov	0.9734	0.9714	0.9654
		Len	4.3322	4.3280	4.1705
400	40	Cov	0.9774	0.9708	0.9538
		Len	4.3299	4.3319	4.2099
400	100	Cov	0.9760	0.9752	0.9462
		Len	4.3323	4.3319	4.2545
400	200	Cov	0.9784	0.9766	0.9438
		Len	4.3416	4.3419	4.2715
1000	20	Cov	0.9588	0.9614	0.9572
		Len	3.5583	3.5590	3.5694
1000	40	Cov	0.9600	0.9584	0.9568
		Len	3.5701	3.5774	3.6937
1000	100	Cov	0.9594	0.9596	0.9494
		Len	3.5725	3.5667	3.7557
1000	200	Cov	0.9652	0.9558	0.9554
		Len	3.5727	3.5718	3.7946

Table 5.270. Etype = 3, J=10, k=p-1

n	p		$\psi = 0$	$\psi = \frac{1}{\sqrt{p}}$	$\psi = 0.9$
100	40	Cov	0.9316	0.9116	0.9358
		Len	22.7435	33.5340	5.9343
400	40	Cov	0.9718	0.9778	0.9666
		Len	4.6645	4.6720	4.7706
1000	40	Cov	0.9710	0.9712	0.9746
		Len	4.0371	4.0395	4.0393
100	100	Cov	0.9418	0.8598	0.8732
		Len	41.0691	85.9486	10.5509
400	100	Cov	0.9212	0.8944	0.9286
		Len	28.7542	37.9353	5.9282
1000	100	Cov	0.9746	0.9746	0.9774
		Len	4.6569	4.6592	4.6608
100	200	Cov	0.9430	0.8216	0.8394
		Len	58.8166	166.3864	19.0220
400	200	Cov	0.9382	0.8686	0.8800
		Len	53.9478	80.7645	9.5054
1000	200	Cov	0.9242	0.9060	0.9330
		Len	37.1177	46.3504	6.5286

Table 5.271. Etype = 3, J=20, k=1

n	p		$\psi = 0$	$\psi = \frac{1}{\sqrt{p}}$	$\psi = 0.9$
100	20	Cov	0.9626	0.9620	0.9626
		Len	3.7786	3.7689	3.8432
100	40	Cov	0.9708	0.9590	0.9620
		Len	3.7851	3.7715	3.8448
100	100	Cov	0.9624	0.9638	0.9620
		Len	3.7838	3.7663	3.8452
100	200	Cov	0.9590	0.9622	0.9580
		Len	3.7769	3.7587	3.8608
400	20	Cov	0.9500	0.9530	0.9472
		Len	3.2196	3.2192	3.2816
400	40	Cov	0.9508	0.9564	0.9540
		Len	3.2139	3.2137	3.2897
400	100	Cov	0.9562	0.9516	0.9516
		Len	3.2111	3.2156	3.3180
400	200	Cov	0.9560	0.9574	0.9506
		Len	3.2120	3.2140	3.3266
1000	20	Cov	0.9576	0.9536	0.9546
		Len	3.0945	3.0985	3.1194
1000	40	Cov	0.9494	0.9426	0.9510
		Len	3.1016	3.0967	3.1331
1000	100	Cov	0.9500	0.9510	0.9456
		Len	3.0945	3.0973	3.1532
1000	200	Cov	0.9484	0.9526	0.9550
		Len	3.0960	3.0988	3.1622

Table 5.272. Etype = 3, J=20, k=19

n	p		$\psi = 0$	$\psi = \frac{1}{\sqrt{p}}$	$\psi = 0.9$
100	20	Cov	0.9538	0.9448	0.9580
		Len	17.3250	25.4635	5.6396
100	40	Cov	0.9554	0.9344	0.9498
		Len	17.3287	27.3010	5.5623
100	100	Cov	0.9514	0.9254	0.9334
		Len	17.3118	28.7847	5.4326
100	200	Cov	0.9418	0.9092	0.9284
		Len	17.3920	29.2473	5.3111
400	20	Cov	0.9750	0.9750	0.9616
		Len	4.3300	4.3219	4.1763
400	40	Cov	0.9762	0.9742	0.9546
		Len	4.3318	4.4112	4.2084
400	100	Cov	0.9758	0.9712	0.9520
		Len	4.3281	4.5877	4.2437
400	200	Cov	0.9792	0.9752	0.9380
		Len	4.3254	4.8688	4.2666
1000	20	Cov	0.9610	0.9602	0.9640
		Len	3.5516	3.5596	3.5646
1000	40	Cov	0.9598	0.9642	0.9522
		Len	3.5734	3.5727	3.6952
1000	100	Cov	0.9570	0.9556	0.9588
		Len	3.5713	3.5718	3.7548
1000	200	Cov	0.9598	0.9560	0.9520
		Len	3.5753	3.5719	3.7946

Table 5.273. Etype = 3, J=20, k=p-1

n	p		$\psi = 0$	$\psi = \frac{1}{\sqrt{p}}$	$\psi = 0.9$
100	40	Cov	0.9472	0.9260	0.9324
		Len	25.6599	55.2863	8.1372
400	40	Cov	0.9486	0.9334	0.9624
		Len	18.1278	20.8450	4.9604
1000	40	Cov	0.9688	0.9682	0.9718
		Len	4.0434	4.0324	4.0368
100	100	Cov	0.9456	0.9096	0.9066
		Len	41.5008	142.2078	17.5771
400	100	Cov	0.9282	0.9144	0.9240
		Len	34.9094	62.9146	8.1336
1000	100	Cov	0.9388	0.9294	0.9542
		Len	27.8204	34.1463	5.7393
100	200	Cov	0.9446	0.8992	0.8912
		Len	59.1021	282.1162	33.4140
400	200	Cov	0.9376	0.8874	0.8880
		Len	54.1021	129.4806	14.6730
1000	200	Cov	0.9342	0.9190	0.9172
		Len	47.1855	79.6843	9.4939

Table 5.274. Etype = 3, J=50, k=1

n	p		$\psi = 0$	$\psi = \frac{1}{\sqrt{p}}$	$\psi = 0.9$
100	20	Cov	0.9638	0.9682	0.9590
		Len	3.7380	3.7457	3.7985
100	40	Cov	0.9614	0.9630	0.9638
		Len	3.7435	3.7268	3.8058
100	100	Cov	0.9692	0.9654	0.9630
		Len	3.7442	3.7444	3.7936
100	200	Cov	0.9612	0.9642	0.9596
		Len	3.7401	3.7434	3.7939
400	20	Cov	0.9518	0.9538	0.9474
		Len	3.2165	3.2121	3.2843
400	40	Cov	0.9532	0.9574	0.9496
		Len	3.2155	3.2109	3.2996
400	100	Cov	0.9478	0.9552	0.9538
		Len	3.2173	3.2165	3.3160
400	200	Cov	0.9536	0.9508	0.9462
		Len	3.2157	3.2126	3.3255
1000	20	Cov	0.9492	0.9506	0.9532
		Len	3.0987	3.1022	3.1240
1000	40	Cov	0.9492	0.9530	0.9518
		Len	3.0996	3.0982	3.1306
1000	100	Cov	0.9548	0.9506	0.9488
		Len	3.1021	3.0984	3.1482
1000	200	Cov	0.9508	0.9486	0.9526
		Len	3.0989	3.0970	3.1670

Table 5.275. Etype = 3, J=50, k=19

n	p		$\psi = 0$	$\psi = \frac{1}{\sqrt{p}}$	$\psi = 0.9$
100	20	Cov	0.9502	0.9364	0.9366
		Len	18.3152	46.7489	8.1529
100	40	Cov	0.9580	0.9316	0.9270
		Len	18.3198	48.8759	8.0814
100	100	Cov	0.9508	0.9320	0.9308
		Len	18.3224	50.1554	7.9819
100	200	Cov	0.9606	0.9288	0.9178
		Len	18.2836	50.2342	7.8609
400	20	Cov	0.9384	0.9310	0.9496
		Len	13.7638	16.5396	4.3506
400	40	Cov	0.9332	0.9262	0.9414
		Len	13.7577	17.8030	4.3524
400	100	Cov	0.9398	0.9276	0.9414
		Len	13.7700	18.9488	4.3771
400	200	Cov	0.9368	0.9268	0.9378
		Len	13.7715	19.6442	4.3809
1000	20	Cov	0.9620	0.9630	0.9602
		Len	3.5587	3.5576	3.5610
1000	40	Cov	0.9654	0.9568	0.9590
		Len	3.5575	3.5561	3.6924
1000	100	Cov	0.9624	0.9562	0.9526
		Len	3.5598	3.5626	3.7582
1000	200	Cov	0.9620	0.9630	0.9498
		Len	3.5552	3.5693	3.7997

Table 5.276. Etype = 3, J=50, k=p-1

n	p		$\psi = 0$	$\psi = \frac{1}{\sqrt{p}}$	$\psi = 0.9$
100	40	Cov	0.9508	0.9400	0.9328
		Len	26.2453	99.0408	15.0066
400	40	Cov	0.9292	0.9162	0.9248
		Len	21.8866	38.8234	6.0805
1000	40	Cov	0.9420	0.9346	0.9478
		Len	17.2337	20.0816	4.4977
100	100	Cov	0.9376	0.9218	0.9214
		Len	41.9770	254.1073	36.3488
400	100	Cov	0.9366	0.9094	0.9048
		Len	36.9149	105.7167	12.8216
1000	100	Cov	0.9314	0.9164	0.9210
		Len	33.7183	63.0990	8.0451
100	200	Cov	NA	0.9194	0.9152
		Len	NA	506.2869	71.3896
400	200	Cov	0.9360	0.8996	0.8986
		Len	54.4719	215.5844	24.7109
1000	200	Cov	0.9280	0.9086	0.9040
		Len	50.5728	133.2308	15.0387

Table 5.277. Etype = 4, J=5, k=1

n	p		$\psi = 0$	$\psi = \frac{1}{\sqrt{p}}$	$\psi = 0.9$
100	20	Cov	0.9896	0.9910	0.9792
		Len	2.2083	2.2065	2.2245
100	40	Cov	0.9914	0.9922	0.9752
		Len	2.2081	2.2071	2.2274
100	100	Cov	0.9900	0.9914	0.9794
		Len	2.2070	2.2052	2.2238
100	200	Cov	0.9910	0.9924	0.9706
		Len	2.2049	2.2071	2.2210
400	20	Cov	0.9702	0.9702	0.9652
		Len	1.9623	1.9624	1.9673
400	40	Cov	0.9690	0.9674	0.9680
		Len	1.9621	1.9626	1.9699
400	100	Cov	0.9714	0.9704	0.9694
		Len	1.9627	1.9624	1.9736
400	200	Cov	0.9682	0.9678	0.9648
		Len	1.9626	1.9619	1.9770
1000	20	Cov	0.9574	0.9562	0.9570
		Len	1.9188	1.9189	1.9189
1000	40	Cov	0.9564	0.9548	0.9576
		Len	1.9187	1.9188	1.9190
1000	100	Cov	0.9530	0.9584	0.9550
		Len	1.9192	1.9191	1.9191
1000	200	Cov	0.9532	0.9562	0.9506
		Len	1.9192	1.9187	1.9190

Table 5.278. Etype = 4, J=5, k=19

n	p		$\psi = 0$	$\psi = \frac{1}{\sqrt{p}}$	$\psi = 0.9$
100	20	Cov	0.9912	0.9906	0.9714
		Len	2.9663	2.9670	2.9300
100	40	Cov	0.9888	0.9770	0.9428
		Len	3.3131	4.7542	3.0338
100	100	Cov	0.9772	0.9398	0.9108
		Len	4.3395	7.5802	3.0910
100	200	Cov	0.9550	0.8766	0.8896
		Len	5.9387	9.5670	3.1067
400	20	Cov	0.9834	0.9848	0.9828
		Len	2.2223	2.2216	2.2229
400	40	Cov	0.9870	0.9796	0.9738
		Len	2.2303	2.2313	2.3126
400	100	Cov	0.9810	0.9810	0.9652
		Len	2.2299	2.2308	2.3874
400	200	Cov	0.9816	0.9804	0.9558
		Len	2.2304	2.2335	2.4401
1000	20	Cov	0.9734	0.9666	0.9678
		Len	2.0060	2.0062	2.0056
1000	40	Cov	0.9682	0.9620	0.9644
		Len	2.0081	2.0083	2.0089
1000	100	Cov	0.9662	0.9660	0.9694
		Len	2.0083	2.0086	2.0132
1000	200	Cov	0.9656	0.9680	0.9670
		Len	2.0088	2.0083	2.0181

Table 5.279. Etype = 4, J=5, k=p-1

n	p		$\psi = 0$	$\psi = \frac{1}{\sqrt{p}}$	$\psi = 0.9$
100	40	Cov	0.9060	0.8960	0.9210
		Len	17.0568	19.1970	3.4131
400	40	Cov	0.9854	0.9848	0.9846
		Len	2.4102	2.4096	2.4109
1000	40	Cov	0.9772	0.9776	0.9794
		Len	2.1266	2.1262	2.1260
100	100	Cov	0.9376	0.8008	0.8120
		Len	40.5312	50.1514	6.0249
400	100	Cov	0.9132	0.9136	0.9422
		Len	17.4085	17.4846	3.1723
1000	100	Cov	0.9836	0.9854	0.9826
		Len	2.3854	2.3852	2.3844
100	200	Cov	0.9448	0.7238	0.7258
		Len	58.8565	93.0229	10.3869
400	200	Cov	0.9334	0.8280	0.8462
		Len	53.6547	48.0680	5.6165
1000	200	Cov	0.9836	0.9846	0.9838
		Len	2.7135	2.7143	2.7150

Table 5.280. Etype = 4, J=10, k=1

n	p		$\psi = 0$	$\psi = \frac{1}{\sqrt{p}}$	$\psi = 0.9$
100	20	Cov	0.9918	0.9930	0.9820
		Len	2.2072	2.2069	2.2243
100	40	Cov	0.9898	0.9924	0.9786
		Len	2.2045	2.2070	2.2240
100	100	Cov	0.9898	0.9916	0.9762
		Len	2.2055	2.2067	2.2252
100	200	Cov	0.9898	0.9902	0.9688
		Len	2.2065	2.2045	2.2204
400	20	Cov	0.9716	0.9686	0.9682
		Len	1.9625	1.9620	1.9664
400	40	Cov	0.9688	0.9702	0.9676
		Len	1.9626	1.9621	1.9698
400	100	Cov	0.9694	0.9678	0.9656
		Len	1.9621	1.9624	1.9740
400	200	Cov	0.9680	0.9700	0.9632
		Len	1.9625	1.9622	1.9783
1000	20	Cov	0.9556	0.9582	0.9558
		Len	1.9188	1.9187	1.9189
1000	40	Cov	0.9550	0.9596	0.9586
		Len	1.9188	1.9190	1.9192
1000	100	Cov	0.9536	0.9548	0.9558
		Len	1.9191	1.9191	1.9188
1000	200	Cov	0.9578	0.9546	0.9598
		Len	1.9190	1.9193	1.9192

Table 5.281. Etype = 4, J=10, k=19

n	p		$\psi = 0$	$\psi = \frac{1}{\sqrt{p}}$	$\psi = 0.9$
100	20	Cov	0.9462	0.9378	0.9564
		Len	13.2943	14.2421	3.0900
100	40	Cov	0.9430	0.9328	0.9388
		Len	13.2918	15.7920	3.1069
100	100	Cov	0.9392	0.9022	0.9226
		Len	13.5050	17.2474	3.1368
100	200	Cov	0.9354	0.8784	0.8968
		Len	14.2810	17.9221	3.1253
400	20	Cov	0.9852	0.9856	0.9874
		Len	2.2218	2.2230	2.2225
400	40	Cov	0.9810	0.9836	0.9732
		Len	2.2302	2.2302	2.3127
400	100	Cov	0.9822	0.9760	0.9630
		Len	2.2308	2.2316	2.3853
400	200	Cov	0.9814	0.9806	0.9544
		Len	2.2313	2.2335	2.4404
1000	20	Cov	0.9646	0.9654	0.9702
		Len	2.0057	2.0059	2.0060
1000	40	Cov	0.9656	0.9682	0.9686
		Len	2.0086	2.0082	2.0095
1000	100	Cov	0.9708	0.9678	0.9720
		Len	2.0082	2.0080	2.0137
1000	200	Cov	0.9628	0.9674	0.9636
		Len	2.0085	2.0084	2.0198

Table 5.282. Etype = 4, J=10, k=p-1

n	p		$\psi = 0$	$\psi = \frac{1}{\sqrt{p}}$	$\psi = 0.9$
100	40	Cov	0.9302	0.8994	0.9196
		Len	22.4118	33.3126	4.6622
400	40	Cov	0.9804	0.9810	0.9830
		Len	2.4110	2.4099	2.4111
1000	40	Cov	0.9746	0.9786	0.9778
		Len	2.1259	2.1260	2.1261
100	100	Cov	0.9374	0.8534	0.8606
		Len	40.8695	85.9899	10.1523
400	100	Cov	0.9168	0.8972	0.9104
		Len	28.5480	37.7866	4.7807
1000	100	Cov	0.9840	0.9842	0.9846
		Len	2.3857	2.3847	2.3854
100	200	Cov	0.9424	0.8324	0.8284
		Len	58.8656	166.2538	18.8425
400	200	Cov	0.9346	0.8578	0.8620
		Len	53.8147	80.8614	8.9997
1000	200	Cov	0.9260	0.9124	0.9204
		Len	36.9422	46.2543	5.4831

Table 5.283. Etype = 4, J=20, k=1

n	p		$\psi = 0$	$\psi = \frac{1}{\sqrt{p}}$	$\psi = 0.9$
100	20	Cov	0.9928	0.9928	0.9792
		Len	2.2081	2.2055	2.2265
100	40	Cov	0.9916	0.9942	0.9764
		Len	2.2067	2.2074	2.2236
100	100	Cov	0.9912	0.9924	0.9724
		Len	2.2053	2.2060	2.2261
100	200	Cov	0.9918	0.9902	0.9758
		Len	2.2065	2.2036	2.2220
400	20	Cov	0.9678	0.9710	0.9676
		Len	1.9627	1.9626	1.9667
400	40	Cov	0.9696	0.9682	0.9684
		Len	1.9629	1.9618	1.9704
400	100	Cov	0.9644	0.9722	0.9682
		Len	1.9628	1.9624	1.9740
400	200	Cov	0.9686	0.9656	0.9630
		Len	1.9621	1.9624	1.9770
1000	20	Cov	0.9536	0.9540	0.9580
		Len	1.9188	1.9187	1.9186
1000	40	Cov	0.9522	0.9602	0.9526
		Len	1.9190	1.9188	1.9187
1000	100	Cov	0.9552	0.9576	0.9552
		Len	1.9189	1.9187	1.9189
1000	200	Cov	0.9578	0.9622	0.9582
		Len	1.9190	1.9187	1.9197

Table 5.284. Etype = 4, J=20, k=19

n	p		$\psi = 0$	$\psi = \frac{1}{\sqrt{p}}$	$\psi = 0.9$
100	20	Cov	0.9558	0.9414	0.9486
		Len	16.9240	25.1561	4.1499
100	40	Cov	0.9480	0.9356	0.9402
		Len	16.9267	27.0543	4.1254
100	100	Cov	0.9480	0.9226	0.9262
		Len	16.8886	28.5521	4.0714
100	200	Cov	0.9498	0.9136	0.9078
		Len	16.9499	29.0220	4.0119
400	20	Cov	0.9868	0.9834	0.9852
		Len	2.2221	2.2217	2.2221
400	40	Cov	0.9848	0.9842	0.9712
		Len	2.2231	2.3283	2.3143
400	100	Cov	0.9856	0.9814	0.9578
		Len	2.2227	2.6051	2.3888
400	200	Cov	0.9842	0.9802	0.9550
		Len	2.2235	3.0102	2.4418
1000	20	Cov	0.9676	0.9682	0.9694
		Len	2.0055	2.0058	2.0063
1000	40	Cov	0.9696	0.9674	0.9686
		Len	2.0084	2.0080	2.0091
1000	100	Cov	0.9692	0.9684	0.9684
		Len	2.0084	2.0080	2.0134
1000	200	Cov	0.9698	0.9674	0.9660
		Len	2.0083	2.0090	2.0192

Table 5.285. Etype = 4, J=20, k=p-1

n	p		$\psi = 0$	$\psi = \frac{1}{\sqrt{p}}$	$\psi = 0.9$
100	40	Cov	0.9440	0.9344	0.9308
		Len	25.3658	55.1993	7.3447
400	40	Cov	0.9456	0.9368	0.9380
		Len	17.7505	20.5967	3.3579
1000	40	Cov	0.9794	0.9746	0.9768
		Len	2.1262	2.1264	2.1273
100	100	Cov	0.9478	0.9080	0.9080
		Len	41.3006	142.4024	17.3067
400	100	Cov	0.9386	0.9030	0.9114
		Len	34.7406	62.8561	7.4318
1000	100	Cov	0.9434	0.9252	0.9360
		Len	27.6031	33.9591	4.4342
100	200	Cov	0.9488	0.8956	0.8888
		Len	58.9871	281.8180	33.3150
400	200	Cov	0.9304	0.8816	0.8882
		Len	53.9918	129.3581	14.3662
1000	200	Cov	0.9296	0.9186	0.9188
		Len	47.0331	79.5852	8.8981

Table 5.286. Etype = 4, J=50, k=1

n	p		$\psi = 0$	$\psi = \frac{1}{\sqrt{p}}$	$\psi = 0.9$
100	20	Cov	0.9952	0.9940	0.9844
		Len	2.1995	2.1990	2.2206
100	40	Cov	0.9950	0.9946	0.9790
		Len	2.1994	2.1988	2.2225
100	100	Cov	0.9926	0.9954	0.9766
		Len	2.1987	2.1997	2.2229
100	200	Cov	0.9920	0.9934	0.9746
		Len	2.1987	2.2002	2.2204
400	20	Cov	0.9690	0.9694	0.9662
		Len	1.9628	1.9620	1.9675
400	40	Cov	0.9712	0.9702	0.9604
		Len	1.9628	1.9622	1.9697
400	100	Cov	0.9686	0.9698	0.9600
		Len	1.9628	1.9625	1.9748
400	200	Cov	0.9680	0.9704	0.9654
		Len	1.9628	1.9623	1.9779
1000	20	Cov	0.9546	0.9592	0.9540
		Len	1.9186	1.9189	1.9191
1000	40	Cov	0.9578	0.9582	0.9528
		Len	1.9191	1.9187	1.9188
1000	100	Cov	0.9592	0.9538	0.9588
		Len	1.9191	1.9191	1.9189
1000	200	Cov	0.9578	0.9528	0.9566
		Len	1.9192	1.9189	1.9197

Table 5.287. Etype = 4, J=50, k=19

n	p		$\psi = 0$	$\psi = \frac{1}{\sqrt{p}}$	$\psi = 0.9$
100	20	Cov	0.9526	0.9402	0.9406
		Len	17.9760	46.5679	7.4740
100	40	Cov	0.9508	0.9370	0.9402
		Len	17.9331	48.7826	7.4297
100	100	Cov	0.9514	0.9320	0.9240
		Len	17.9586	50.0622	7.3322
100	200	Cov	0.9466	0.9276	0.9188
		Len	17.9552	50.1822	7.2336
400	20	Cov	0.9346	0.9242	0.9382
		Len	13.3738	16.2255	3.0134
400	40	Cov	0.9370	0.9366	0.9378
		Len	13.3648	17.5203	3.0168
400	100	Cov	0.9378	0.9216	0.9336
		Len	13.3743	18.6899	3.0358
400	200	Cov	0.9444	0.9264	0.9258
		Len	13.3646	19.3521	3.0535
1000	20	Cov	0.9690	0.9674	0.9706
		Len	2.0058	2.0058	2.0061
1000	40	Cov	0.9680	0.9672	0.9662
		Len	2.0056	2.0083	2.0081
1000	100	Cov	0.9650	0.9668	0.9698
		Len	2.0055	2.0134	2.0140
1000	200	Cov	0.9650	0.9684	0.9652
		Len	2.0063	2.0059	2.0178

Table 5.288. Etype = 4, J=50, k=p-1

n	p		$\psi = 0$	$\psi = \frac{1}{\sqrt{p}}$	$\psi = 0.9$
100	40	Cov	0.9516	0.9320	0.9304
		Len	25.9949	98.8902	14.6622
400	40	Cov	0.9382	0.9212	0.9240
		Len	21.6276	38.7537	5.2064
1000	40	Cov	0.9354	0.9296	0.9360
		Len	16.9444	19.8288	3.1947
100	100	Cov	0.9484	0.9346	0.9204
		Len	41.7534	254.0269	36.1595
400	100	Cov	0.9304	0.9100	0.9092
		Len	36.7289	105.6726	12.4624
1000	100	Cov	0.9258	0.9132	0.9142
		Len	33.5287	64.1876	7.4149
100	200	Cov	0.9472	0.9204	0.9216
		Len	59.2100	505.6271	71.3569
400	200	Cov	0.9386	0.8990	0.8968
		Len	54.3540	215.3958	24.5495
1000	200	Cov	0.9316	0.9054	0.9012
		Len	50.4785	133.2046	14.7530

Table 5.289. Etype = 5, J=5, k=1

n	p		$\psi = 0$	$\psi = \frac{1}{\sqrt{p}}$	$\psi = 0.9$
100	20	Cov	0.9416	0.9418	0.9430
		Len	13.7744	13.7533	14.0450
100	40	Cov	0.9412	0.9424	0.9498
		Len	13.7591	13.8346	14.2835
100	100	Cov	0.9440	0.9450	0.9466
		Len	13.6856	13.5354	14.1634
100	200	Cov	0.9368	0.9426	0.9456
		Len	13.4667	13.5818	14.4944
400	20	Cov	0.9444	0.9462	0.9366
		Len	12.5336	12.5414	12.5615
400	40	Cov	0.9398	0.9400	0.9420
		Len	12.5302	12.5153	12.5147
400	100	Cov	0.9446	0.9424	0.9470
		Len	12.4439	12.4857	12.5657
400	200	Cov	0.9396	0.9400	0.9478
		Len	12.4129	12.4970	12.5170
1000	20	Cov	0.9422	0.9480	0.9426
		Len	12.7085	12.6851	12.6970
1000	40	Cov	0.9464	0.9460	0.9444
		Len	12.6467	12.6349	12.6916
1000	100	Cov	0.9422	0.9432	0.9450
		Len	12.6234	12.6757	12.6424
1000	200	Cov	0.9504	0.9424	0.9474
		Len	12.7262	12.6543	12.5888

Table 5.290. Etype = 5, J=5, k=19

n	p		$\psi = 0$	$\psi = \frac{1}{\sqrt{p}}$	$\psi = 0.9$
100	20	Cov	0.9568	0.9706	0.9534
		Len	21.8404	22.0011	15.9242
100	40	Cov	0.9476	0.9560	0.9510
		Len	20.2484	19.9555	15.3632
100	100	Cov	0.9440	0.9222	0.9414
		Len	21.1782	19.8807	15.0603
100	200	Cov	0.9420	0.8844	0.9438
		Len	21.8344	20.3214	14.6771
400	20	Cov	0.9718	0.9702	0.9456
		Len	21.2147	21.2535	13.4103
400	40	Cov	0.9724	0.9638	0.9394
		Len	21.0893	21.1343	13.3680
400	100	Cov	0.9700	0.9690	0.9450
		Len	20.9233	20.8773	13.0638
400	200	Cov	0.9630	0.9644	0.9422
		Len	20.8480	20.9003	13.0574
1000	20	Cov	0.9566	0.9582	0.9458
		Len	15.7497	15.7355	13.2877
1000	40	Cov	0.9518	0.9538	0.9436
		Len	15.8588	15.8285	13.1573
1000	100	Cov	0.9534	0.9524	0.9442
		Len	15.7830	15.8592	13.0396
1000	200	Cov	0.9574	0.9548	0.9454
		Len	15.7961	15.7520	12.9725

Table 5.291. Etype = 5, J=5, k=p-1

n	p		$\psi = 0$	$\psi = \frac{1}{\sqrt{p}}$	$\psi = 0.9$
100	40	Cov	0.9318	0.9224	0.9504
		Len	25.2335	24.6307	17.4242
400	40	Cov	0.9696	0.9676	0.9474
		Len	21.7556	21.6811	14.5232
1000	40	Cov	0.9676	0.9630	0.9484
		Len	19.8813	19.8024	13.9840
100	100	Cov	0.9438	0.8054	0.9228
		Len	43.2638	51.3765	17.6832
400	100	Cov	0.9502	0.9470	0.9546
		Len	23.7750	23.7304	17.5792
1000	100	Cov	0.9742	0.9716	0.9584
		Len	22.7117	22.6312	16.0372
100	200	Cov	0.9486	0.7130	0.8302
		Len	60.5080	93.6231	17.2067
400	200	Cov	0.9366	0.8364	0.9404
		Len	55.8214	49.6055	17.9916
1000	200	Cov	0.9710	0.9738	0.9656
		Len	23.2567	23.2984	19.1344

Table 5.292. Etype = 5, J=10, k=1

n	p		$\psi = 0$	$\psi = \frac{1}{\sqrt{p}}$	$\psi = 0.9$
100	20	Cov	0.9456	0.9382	0.9460
		Len	13.9704	13.6198	14.1512
100	40	Cov	0.9408	0.9466	0.9456
		Len	13.7736	13.6817	14.2589
100	100	Cov	0.9422	0.9346	0.9478
		Len	13.6277	13.6479	14.4238
100	200	Cov	0.9376	0.9432	0.9460
		Len	13.4761	13.6706	14.4099
400	20	Cov	0.9456	0.9444	0.9396
		Len	12.5092	12.5584	12.4909
400	40	Cov	0.9492	0.9428	0.9444
		Len	12.5053	12.5274	12.5737
400	100	Cov	0.9480	0.9398	0.9398
		Len	12.4854	12.4890	12.5329
400	200	Cov	0.9434	0.9450	0.9426
		Len	12.5495	12.4826	12.5064
1000	20	Cov	0.9410	0.9416	0.9452
		Len	12.6959	12.6473	12.6793
1000	40	Cov	0.9462	0.9456	0.9404
		Len	12.6464	12.7034	12.6281
1000	100	Cov	0.9494	0.9494	0.9470
		Len	12.6679	12.6779	12.6471
1000	200	Cov	0.9450	0.9436	0.9428
		Len	12.6439	12.6477	12.6863

Table 5.293. Etype = 5, J=10, k=19

n	p		$\psi = 0$	$\psi = \frac{1}{\sqrt{p}}$	$\psi = 0.9$
100	20	Cov	0.9540	0.9504	0.9490
		Len	21.7386	22.1184	15.9085
100	40	Cov	0.9466	0.9438	0.9436
		Len	21.6670	22.5236	15.4813
100	100	Cov	0.9450	0.9244	0.9442
		Len	21.8859	22.7787	15.0444
100	200	Cov	0.9474	0.9062	0.9398
		Len	22.1617	22.8439	14.7146
400	20	Cov	0.9690	0.9678	0.9454
		Len	21.2827	21.2949	13.4655
400	40	Cov	0.9660	0.9670	0.9488
		Len	21.1397	20.9619	13.3353
400	100	Cov	0.9680	0.9698	0.9464
		Len	21.0313	20.9087	13.1122
400	200	Cov	0.9698	0.9686	0.9460
		Len	20.9540	20.8433	12.9878
1000	20	Cov	0.9518	0.9504	0.9472
		Len	15.7467	15.7748	13.3152
1000	40	Cov	0.9526	0.9512	0.9444
		Len	15.8600	15.8020	13.1378
1000	100	Cov	0.9540	0.9582	0.9470
		Len	15.7592	15.7849	13.1188
1000	200	Cov	0.9604	0.9576	0.9432
		Len	15.8588	15.7830	13.0255

Table 5.294. Etype = 5, J=10, k=p-1

n	p		$\psi = 0$	$\psi = \frac{1}{\sqrt{p}}$	$\psi = 0.9$
100	40	Cov	0.9390	0.9114	0.9600
		Len	27.8852	36.0451	17.4160
400	40	Cov	0.9658	0.9686	0.9506
		Len	21.6142	21.6398	14.5525
1000	40	Cov	0.9684	0.9626	0.9530
		Len	19.8636	19.7917	14.0001
100	100	Cov	0.9462	0.8592	0.9248
		Len	43.4317	86.5883	18.0714
400	100	Cov	0.9242	0.9078	0.9612
		Len	32.0824	40.1422	17.6497
1000	100	Cov	0.9706	0.9724	0.9510
		Len	22.6342	22.6756	16.0697
100	200	Cov	0.9450	0.8412	0.8630
		Len	60.5503	166.7841	22.4312
400	200	Cov	0.9364	0.8642	0.9374
		Len	55.7946	81.5550	17.8955
1000	200	Cov	0.9286	0.9162	0.9598
		Len	39.6634	48.2465	19.1529

Table 5.295. Etype = 5, J=20, k=1

n	p		$\psi = 0$	$\psi = \frac{1}{\sqrt{p}}$	$\psi = 0.9$
100	20	Cov	NA	0.9448	0.9466
		Len	NA	13.8836	14.1494
100	40	Cov	NA	0.9472	0.9432
		Len	NA	13.6475	14.1290
100	100	Cov	NA	0.9440	0.9448
		Len	NA	13.5954	14.2865
100	200	Cov	NA	0.9426	0.9438
		Len	NA	13.6824	14.4997
400	20	Cov	0.9446	0.9482	0.9446
		Len	12.5538	12.5561	12.5513
400	40	Cov	0.9474	0.9504	0.9438
		Len	12.5944	12.5514	12.5165
400	100	Cov	0.9436	0.9452	0.9400
		Len	12.5469	12.5254	12.4589
400	200	Cov	0.9416	0.9490	0.9486
		Len	12.5115	12.4802	12.5541
1000	20	Cov	0.9504	0.9440	0.9476
		Len	12.6732	12.6755	12.6030
1000	40	Cov	0.9454	0.9448	0.9482
		Len	12.6697	12.7178	12.6997
1000	100	Cov	0.9416	0.9462	0.9398
		Len	12.6516	12.6982	12.6713
1000	200	Cov	0.9384	0.9460	0.9402
		Len	12.6251	12.6949	12.6529

Table 5.296. Etype = 5, J=20, k=19

n	p		$\psi = 0$	$\psi = \frac{1}{\sqrt{p}}$	$\psi = 0.9$
100	20	Cov	0.9546	0.9452	0.9472
		Len	23.5938	29.4323	15.9353
100	40	Cov	0.9562	0.9388	0.9504
		Len	22.9139	30.8728	15.5382
100	100	Cov	0.9500	0.9248	0.9452
		Len	22.4660	31.9061	15.0362
100	200	Cov	0.9478	0.9178	0.9436
		Len	22.3463	32.0937	14.7010
400	20	Cov	0.9658	0.9696	0.9450
		Len	21.2237	21.2336	13.4960
400	40	Cov	0.9662	0.9704	0.9484
		Len	21.2814	21.0677	13.3628
400	100	Cov	0.9694	0.9686	0.9438
		Len	21.0911	20.9339	13.1313
400	200	Cov	0.9722	0.9676	0.9400
		Len	21.0768	20.9259	12.9866
1000	20	Cov	0.9570	0.9556	0.9474
		Len	15.8185	15.8114	13.2855
1000	40	Cov	0.9562	0.9492	0.9466
		Len	15.7953	15.8180	13.2025
1000	100	Cov	0.9524	0.9542	0.9524
		Len	15.8802	15.8333	13.0893
1000	200	Cov	0.9554	0.9558	0.9498
		Len	15.7618	15.8330	13.0066

Table 5.297. Etype = 5, J=20, k=p-1

n	p		$\psi = 0$	$\psi = \frac{1}{\sqrt{p}}$	$\psi = 0.9$
100	40	Cov	0.9496	0.9306	0.9502
		Len	29.4655	56.9789	17.4281
400	40	Cov	0.9540	0.9534	0.9488
		Len	23.8107	25.4847	14.5761
1000	40	Cov	0.9630	0.9688	0.9526
		Len	19.8771	19.8837	14.0218
100	100	Cov	0.9420	0.9064	0.9316
		Len	43.7164	142.8182	22.3331
400	100	Cov	0.9392	0.9140	0.9504
		Len	37.7221	64.2063	17.6274
1000	100	Cov	0.9482	0.9412	0.9514
		Len	31.5194	36.9199	16.0170
100	200	Cov	0.9494	0.8950	0.8932
		Len	60.6563	282.4824	35.5272
400	200	Cov	0.9412	0.8974	0.9306
		Len	55.8279	129.9768	20.0139
1000	200	Cov	0.9420	0.9106	0.9604
		Len	49.1582	80.5964	19.1688

Table 5.298. Etype = 5, J=50, k=1

n	p		$\psi = 0$	$\psi = \frac{1}{\sqrt{p}}$	$\psi = 0.9$
100	20	Cov	NA	0.9456	0.9348
		Len	NA	13.5741	13.7950
100	40	Cov	NA	NA	0.9494
		Len	NA	NA	13.6289
100	100	Cov	NA	NA	0.9450
		Len	NA	NA	13.6519
100	200	Cov	NA	NA	0.9406
		Len	NA	NA	13.5790
400	20	Cov	0.9438	0.9474	0.9458
		Len	12.5302	12.5731	12.5434
400	40	Cov	0.9388	0.9478	0.9446
		Len	12.5783	12.5485	12.5027
400	100	Cov	0.9470	0.9432	0.9422
		Len	12.4726	12.5845	12.5171
400	200	Cov	0.9428	0.9436	0.9452
		Len	12.5182	12.5088	12.5982
1000	20	Cov	0.9484	0.9464	0.9426
		Len	12.6590	12.6682	12.6691
1000	40	Cov	0.9504	0.9504	0.9486
		Len	12.7274	12.6785	12.5637
1000	100	Cov	0.9470	0.9490	0.9440
		Len	12.6366	12.6601	12.6814
1000	200	Cov	0.9424	0.9450	0.9464
		Len	12.6364	12.6831	12.6267

Table 5.299. Etype = 5, J=50, k=19

n	p		$\psi = 0$	$\psi = \frac{1}{\sqrt{p}}$	$\psi = 0.9$
100	20	Cov	0.9486	0.9376	0.9364
		Len	22.5573	48.4832	14.6810
100	40	Cov	0.9448	0.9382	0.9422
		Len	22.5347	50.4730	14.5887
100	100	Cov	NA	0.9316	0.9418
		Len	NA	51.6932	14.4896
100	200	Cov	NA	0.9312	0.9410
		Len	NA	51.7552	14.3035
400	20	Cov	0.9528	0.9396	0.9442
		Len	18.6547	20.5442	13.5044
400	40	Cov	0.9448	0.9382	0.9426
		Len	18.6282	21.6504	13.2947
400	100	Cov	0.9484	0.9350	0.9520
		Len	18.6338	22.6098	13.1027
400	200	Cov	0.9460	0.9376	0.9464
		Len	18.6098	23.1717	12.9855
1000	20	Cov	0.9572	0.9576	0.9484
		Len	15.7290	15.7720	13.2574
1000	40	Cov	0.9584	0.9502	0.9476
		Len	15.7845	15.7958	13.1902
1000	100	Cov	0.9600	0.9512	0.9446
		Len	15.7416	15.7818	13.0950
1000	200	Cov	0.9586	0.9514	0.9538
		Len	15.8218	15.7466	13.0831

Table 5.300. Etype = 5, J=50, k=p-1

n	p		$\psi = 0$	$\psi = \frac{1}{\sqrt{p}}$	$\psi = 0.9$
100	40	Cov	0.9460	0.9328	0.9334
		Len	29.5173	99.8619	19.2659
400	40	Cov	0.9348	0.9196	0.9502
		Len	25.3438	40.7307	14.5198
1000	40	Cov	0.9456	0.9382	0.9476
		Len	21.3802	23.6157	14.0232
100	100	Cov	0.9492	0.9250	0.9198
		Len	44.0343	254.0900	38.2052
400	100	Cov	0.9304	0.9102	0.9262
		Len	39.1433	106.3686	17.2458
1000	100	Cov	0.9354	0.9148	0.9518
		Len	36.0727	64.2118	15.1087
100	200	Cov	0.9420	0.9138	0.9092
		Len	60.8964	506.5833	72.3018
400	200	Cov	0.9400	0.8980	0.9036
		Len	56.0239	215.8089	27.2562
1000	200	Cov	0.9272	0.9030	0.9274
		Len	52.1613	133.7199	19.0295

5.4 SIMULATIONS FOR THE NEW PI

For the model $\boldsymbol{Y} = \boldsymbol{X}\boldsymbol{\beta} + \boldsymbol{e}$, methods such as forward selection, PCR, PLS, ridge regression, relaxed lasso, and lasso each generate M fitted models $I_1, ..., I_M$, where M depends on the method, and we considered several methods for selecting the final submodel I_d. Only method i) needs n/p large.

i) Let $I_d = I_{min}$ be the model that minimizes C_p for forward selection, relaxed lasso, or lasso.

ii) Let I_d use $d = \min(\lceil n/J \rceil, p)$ variables where J is a positive integer. We used J = 5, 10, 20, and 50. Forward selection used $M = d$. (For ridge regression, we used the model I_c with the "degrees of freedom" closest to d.) For PCR and PLS, the "variables" were the $v_j = \gamma_j^T \boldsymbol{x}$. This method uses the full OLS model if $n/p \geq J$ for forward selection, PCR, PLS, ridge regression, relaxed lasso, and lasso. Hence large sample inference is simple for these six model selection estimators if p is fixed. For lasso, several values of λ may have the same degrees of freedom: we chose the model with the smallest λ value. In the simulation for lasso with $d = p$, we used the lasso model with λ_0 instead of OLS. See Section 5.2.

iii) Let $I_d = I_{min}$ be the model that minimizes $EBIC$ for forward selection or relaxed lasso. For forward selection, we used $M = \min(\lceil n/5 \rceil, p)$. See Section 5.3.

iv) Choose I_d using k–fold cross validation (CV). We used 10-fold CV.

The following method is currently slow to simulate, but is a useful diagnostic. When the model underfits, PI (3.7) tends to have coverage near or greater than the nominal 0.95 coverage, but the PI length is long. When the model severely overfits, the PI length is short, but the coverage is less than 0.95. See Section 5.1.

v) Modify k–fold cross validation to compute the PI coverage and average PI length on all M models. Then n PIs are made for Y_i using $\boldsymbol{x}_f = \boldsymbol{x}_i$ for $i = 1, ..., n$. The coverage is the proportion of times the n PIs contained Y_i. For example, choose the model I_d with the shortest average PI length given that the nominal large sample $100(1-\delta)\%$ PI had coverage

$$\geq c_n = \max(1 - \delta - \frac{1}{\sqrt{n}}, 1 - \delta - 0.01).$$

If no model I_i had coverage $\geq c_n$, pick the model with the largest coverage.

The simulation for the new PIs (3.11) and (3.12) was similar to that in section 5.1. Let $\boldsymbol{x} = (1 \ \boldsymbol{u}^T)^T$ where $\boldsymbol{u}$ is the $p-1 \times 1$ vector of nontrivial predictors. In the simulations, for $i = 1, ..., n$, we generated $\boldsymbol{w}_i \sim N_{p-1}(\boldsymbol{0}, \boldsymbol{I})$ where the $m = p - 1$ elements of the vector $\boldsymbol{w}_i$ are iid N(0,1). Let the $m \times m$ matrix $\boldsymbol{A} = (a_{ij})$ with $a_{ii} = 1$ and $a_{ij} = \psi$ where $0 \leq \psi < 1$ for $i \neq j$. Then the vector $\boldsymbol{u}_i = \boldsymbol{A}\boldsymbol{w}_i$ so that $Cov(\boldsymbol{u}_i) = \boldsymbol{\Sigma}_{\boldsymbol{u}} = \boldsymbol{A}\boldsymbol{A}^T = (\sigma_{ij})$ where the diagonal entries $\sigma_{ii} = [1 + (m-1)\psi^2]$ and the off diagonal entries $\sigma_{ij} = [2\psi + (m-2)\psi^2]$. Hence the correlations are $cor(x_i, x_j) = \rho = (2\psi + (m-2)\psi^2)/(1 + (m-1)\psi^2)$ for $i \neq j$ where x_i and x_j are nontrivial predictors. If $\psi = 1/\sqrt{cp}$, then $\rho \to 1/(c+1)$ as $p \to \infty$ where $c > 0$. As ψ gets close to 1, the predictor vectors cluster about the line in the direction of $(1, ..., 1)^T$. Then $Y_i = 1 + 1x_{i,2} + \cdots + 1x_{i,k} + e_i$ for $i = 1, ..., n$. Hence $\boldsymbol{\beta} = (1, .., 1, 0, ..., 0)^T$ with $k+1$ ones and $p-k-1$ zeros. The zero mean errors e_i were iid of five types: i) N(0,1) errors, ii) t_3 errors, iii) EXP(1) - 1 errors, iv) uniform$(-1, 1)$ errors, and v) 0.9 N(0,1) + 0.1 N(0,100) errors.

The lengths of the asymptotically optimal 95% PIs are i) $3.92 = 2(1.96)$, ii) 6.365, iii) 2.996, iv) $1.90 = 2(0.95)$, and v) 13.490. The simulation used 5000 runs, so an observed coverage in [0.94, 0.96] gives no reason to doubt that the PI has the nominal coverage of 0.95. The simulation used $p = 20, 40, n$, and $2n$. The simulation used $\psi = 0, 1/\sqrt{p}$, and 0.9, and $k = 1, 19$, and $p - 1$.

Table 5.301 shows some simulation results. For lasso, often more than one λ value had $d - 1$ active predictors, and we used the value of λ closest to 0. If $d = p$, lasso and relaxed lasso used the selected value of λ rather than the OLS full model. For $N(0, 1)$ errors, $\psi = 0$, and $d < k$, the asymptotically optimal PI length is $3.92\sqrt{k - d + 1}$.

Table 5.301. Simulated Large Sample 95% PI Coverages and Lengths, $e_i \sim N(0,1)$

n	p	ψ	k		FS	lasso	RL	RR	PLS	PCR
100	20	0	1	Cov	0.9644	0.9570	0.9534	0.9354	0.9438	0.9772
				Len	4.4490	4.3849	4.3648	4.1441	4.4149	5.5647
100	40	0	1	Cov	0.9654	0.9522	0.9482	0.8932	0.8810	0.9882
				Len	4.4294	4.3113	4.2734	3.8982	4.0202	7.3393
100	100	0	1	Cov	0.9686	0.9494	0.9414	0.9554	0.8000	0.9932
				Len	4.4274	4.2427	4.1600	5.4422	3.5035	9.5767
100	200	0	1	Cov	0.9648	0.9332	0.9222	0.9254	0.6616	0.9922
				Len	4.4268	4.1546	4.0340	4.9843	2.7695	12.4116
200	20	0	19	Cov	0.9788	0.9766	0.9788	0.9792	0.9550	0.9786
				Len	4.9613	4.9636	4.9613	5.0458	4.3211	4.9610
200	40	0	19	Cov	0.9742	0.9650	0.9732	0.9606	0.9324	0.9792
				Len	4.9285	4.8146	4.8567	4.8044	4.2152	5.3616
200	100	0	19	Cov	0.9746	0.9456	0.9472	0.8416	0.7834	1.0000
				Len	4.9057	4.5640	4.5551	3.9090	3.4810	23.3839
200	200	0	19	Cov	0.9728	0.9124	0.9136	0.9696	0.3500	1.0000
				Len	4.8835	4.3197	4.2244	16.5887	2.1451	51.8962
400	20	0	19	Cov	0.9756	0.9756	0.9756	0.9760	0.9516	0.9756
				Len	4.6934	4.6959	4.6934	4.7504	4.0704	4.6934
400	40	0	19	Cov	0.9738	0.9748	0.9760	0.9714	0.9412	0.9790
				Len	4.6733	4.6638	4.6813	4.6776	4.0165	4.9001
400	100	0	19	Cov	0.9686	0.9554	0.9588	0.9250	0.8928	1.0000
				Len	4.6777	4.5262	4.4992	4.2544	3.7749	9.6077
400	200	0	19	Cov	0.9718	0.9528	0.9430	0.7956	0.7306	1.0000
				Len	4.6784	4.4430	4.3454	3.5541	3.1304	22.9925

5.5 SIMULATIONS FOR BOOTSTRAPPING

Assume $n \geq 20p$ and that the error distribution is unimodal and not highly skewed. The response plot and residual plot are plots with $\hat{Y} = \boldsymbol{x}^T \hat{\boldsymbol{\beta}}$ on the horizontal axis and Y or r on the vertical axis, respectively. Then the plotted points in these plots should scatter in roughly even bands about the identity line with unit slope and zero intercept and $r = 0$ lines, respectively. See Figure 5.1. If the plots for the OLS full model suggest that the error distribution is skewed or multimodal, then much larger sample sizes may be needed.

If the error distribution is unknown, then large sample theory tests are straightforward if the estimator is asymptotically equivalent to the OLS full model, e.g. $\hat{\lambda}_{1,n} = o_P(\sqrt{n})$, or choose the OLS full model if $n \geq 50p$. The latter technique may be reasonable if the large sample theory of the method is not better than that of the OLS full model (lasso and ridge regression), if it is not known how to do inference unless the model is asymptotically equivalent to the OLS full model (PCR), or if it is not known how to do inference for the model (PLS, forward selection).

The residual bootstrap with the residuals from the OLS full model can provide a lot of information. Olive (2017a: p. 128, 2017b) showed that the prediction region method can simulate well for the $p \times 1$ vector $\hat{\boldsymbol{\beta}}_{I_{min},0}$ obtained by adding zeroes to $\hat{\boldsymbol{\beta}}_{I_{min}}$ where I_{min} is the model that minimizes C_p for forward selection. Asymptotically, $\hat{\boldsymbol{\beta}}_{I_{min},0}$ is a mixture $\sum_j \pi_j \hat{\boldsymbol{\beta}}_{I_j,0}$ where $0 \leq \pi_j \leq 1$ and $\sum_j \pi_j = 1$ where the sum is over all 2^{p-a_S} submodels I_j that contain S. Results from Knight and Fu (2000) show that each component $\hat{\boldsymbol{\beta}}_{I_j,0}$ has the correct asymptotically multivariate normal distribution, but we may need at least $50p$ bootstrap samples per component with nonnegligible π_j. The number of nonnegligible π_j

can be small if $p - a_S$ is small or if a criterion that picks S with high probability, such as BIC, is used. Here $Y = \boldsymbol{x}^T\boldsymbol{\beta} + e = \boldsymbol{x}_S^T\boldsymbol{\beta}_S + e$ where $\boldsymbol{\beta}_S$ is $a_s \times 1$.

Examining $\hat{\boldsymbol{\beta}}_S$ and $\hat{\boldsymbol{\beta}}_E$ is informative for I_{min}. First assume that the nontrivial predictors are uncorrelated or orthogonal so $\boldsymbol{X}^T\boldsymbol{X}/n \to diag(d_1, ..., d_p)$ as $n \to \infty$ where each $d_i > 0$. Then $\hat{\boldsymbol{\beta}}_S$ has the same limiting distribution for I_{min} and for the OLS full model. The bootstrap distribution for $\hat{\boldsymbol{\beta}}_E$ is a mixture of zeroes and a distribution that would produce a confidence region for $\boldsymbol{A}\boldsymbol{\beta}_E = \boldsymbol{0}$ that has asymptotic coverage of $\boldsymbol{0}$ equal to $100(1-\delta)\%$. Hence the asymptotic coverage is greater than the nominal coverage provided that $\boldsymbol{S}_T$ in nonsingular with probability going to one (e.g., $p - a_S$ is small), where $T = \boldsymbol{A}\hat{\boldsymbol{\beta}}_{E,I_{min}}$. With uncorrelated predictors, the number of bootstrap samples $B \geq 50p$ may work well for the shorth confidence intervals and for testing $\boldsymbol{A}\boldsymbol{\beta}_S = \boldsymbol{0}$.

We do not yet have a proof that the prediction region method works when the estimator is not asymptotically multivariate normal, but in the simulations for forward selection, coverages were similar regardless of the correlation of the predictors. Let $\boldsymbol{\beta}_O$ be a vector component of $\boldsymbol{\beta}_E$, and consider testing $H_0 : \boldsymbol{A}\boldsymbol{\beta}_O = \boldsymbol{0}$. If $\boldsymbol{A}\hat{\boldsymbol{\beta}}^*_{O,i} = \boldsymbol{0}$ for greater than $B\delta$ of the bootstrap samples $i = 1, ..., B$, then the $100(1-\delta)\%$ prediction region method confidence region will contain $\boldsymbol{0}$, and the test will fail to reject H_0.

Suppose we want to bootstrap $T = \hat{\boldsymbol{\beta}}_O$, where $\boldsymbol{\beta} = (\boldsymbol{\beta}_I^T, \boldsymbol{\beta}_O^T)^T$, and all $\hat{\boldsymbol{\beta}}^*_{O,i} = \boldsymbol{0}$ for $i = 1, ..., B$. Then $\boldsymbol{S}_T$ is singular, but the singleton set $\{\boldsymbol{0}\}$ is the large sample prediction region method $100(1-\delta)\%$ confidence region for $\boldsymbol{\beta}_O$ and $\delta \in (0, 1)$, and the pvalue for $H_0 : \boldsymbol{\beta}_O = \boldsymbol{0}$ is one. For large sample theory tests, the pvalue estimates the population pvalue. For the I_{min} model from forward selection, there may be strong evidence that $\boldsymbol{x}_O$

is not needed in the model given $\boldsymbol{x}_I$ is in the model if the confidence region is $\{\mathbf{0}\}$, $n \geq 20p$, $B \geq 50p$, and the error distribution is unimodal and not highly skewed. (Since the pvalue is one, this technique may be useful for data snooping: applying OLS theory to submodel I may have negligible selection bias.)

A small simulation was done, using the same type of data as for the prediction interval simulation, using $B = \max(1000, n, 20p)$ and 5000 runs. The regression model used $\boldsymbol{\beta} = (1, 1, 0, 0)^T$ with $n = 100$ and $p = 4$. When $\psi = 0$, the design matrix $\boldsymbol{X}$ consisted of iid N(0,1) random variables, and the full model least squares confidence intervals for β_i should have length near $2t_{96,0.975}\sigma/\sqrt{n} \approx 2(1.96)\sigma/10 = 0.392\sigma$ when the iid zero mean errors have variance σ^2. The simulation computed the Frey shorth(c) interval for each β_i and used the prediction region method to test $H_0 : \beta_3 = \beta_4 = 0$. The nominal coverage was 0.95 with $\delta = 0.05$. Observed coverage between 0.94 and 0.96 would suggest coverage is close to the nominal value. Models with the first $k + 1$ $\beta_i = 1$ and the last $p - k - 1$ $\beta_i = 0$ were also considered.

The regression models used the residual bootstrap on the full model least squares estimator and on the forward selection estimator $\hat{\boldsymbol{\beta}}_{I_{min},0}$. Results are shown for when the iid errors $e_i \sim N(0, 1)$. Table 5.302 shows two rows for each model giving the observed confidence interval coverages and average lengths of the confidence intervals. The term "reg" is for the full model regression, and the term "vs" is for forward selection. The column for the "test" gives the length and coverage = P(fail to reject H_0) for the interval $[0, D_{(U_B)}]$ where $D_{(U_B)}$ is the cutoff for the confidence region. These lengths do not give information about the volume of the confidence region, which will decrease to 0 as $n \to \infty$.

The cutoff will often be near $\sqrt{\chi^2_{r,0.95}}$ if the statistic T is asymptotically normal. Note that $\sqrt{\chi^2_{2,0.95}} = 2.448$ is close to 2.45 for the full model regression bootstrap test. The coverages were near 0.95 for the regression bootstrap on the full model.

Suppose $\psi = 0$. Then $\hat{\boldsymbol{\beta}}_S$ has the same limiting distribution for I_{min} and the full model. Note that the average lengths and coverages were similar for the full model and forward selection I_{min} for β_1 and β_2 and $\boldsymbol{\beta}_S = (\beta_1, \beta_2)^T$.

Table 5.302. Bootstrapping OLS Regression and Forward Selection

model	ψ	cov/len	β_1	β_2	β_3	β_4	test
reg	0	cov	0.9456	0.9474	0.9496	0.9474	0.9442
		len	0.3961	0.3997	0.3988	0.3992	2.4503
vs	0	cov	0.9472	0.9470	0.9980	0.9980	0.9936
		len	0.3964	0.3991	0.3246	0.3233	2.6936
reg	0.5	cov	0.9432	0.9452	0.9498	0.9506	0.9436
		len	0.3976	0.6642	0.6645	0.6637	2.4507
vs	0.5	cov	0.9458	0.9728	0.9976	0.9974	0.9926
		len	0.3966	0.6598	0.5383	0.5383	2.7055
reg	0.9	cov	0.9432	0.9512	0.9500	0.9498	0.9442
		len	0.3963	3.2621	3.2613	3.2611	2.4505
vs	0.9	cov	0.9422	0.9678	0.9944	0.9970	0.9914
		len	0.3957	2.7640	2.7356	2.7430	2.7121

Table 5.303. Bootstrap LASSO, $\psi = 0$

n	eps	type		β_1	β_2	β_3	β_4	test
100		1	cicov	0.9440	0.9376	0.9910	0.9946	0.9790
			avelen	0.4143	0.4470	0.3759	0.3763	2.6444
		2	cicov	0.9468	0.9428	0.9946	0.9944	0.9816
			avelen	0.6870	0.7565	0.6238	0.6226	2.6832
		3	cicov	0.9418	0.9408	0.9930	0.9948	0.9840
			avelen	0.4110	0.4506	0.3743	0.3746	2.6684
			avelen	0.2392	0.2578	0.2151	0.2153	2.6454
	0.5	5	cicov	0.9438	0.9344	0.9988	0.9970	0.9924
			avelen	2.9380	2.5042	2.4912	2.4715	2.8536
	0.9	5	cicov	0.9506	0.9290	0.9974	0.9976	0.9956
			avelen	3.9180	3.2760	3.2739	3.2702	2.8836
200		1	cicov	0.9494	0.9390	0.9942	0.9924	0.9802
5			avelen	0.4132	0.4460	0.3754	0.3760	2.6455
		2	cicov	0.9474	0.9502	0.9966	0.9948	0.9860
			avelen	0.4902	0.5365	0.4445	0.4448	2.6726
		3	cicov	0.9432	0.9440	0.9958	0.9966	0.9852
			avelen	0.2924	0.3167	0.2641	0.2647	2.6617
		4	cicov	0.9504	0.9354	0.9952	0.9948	0.9858
			avelen	0.1699	0.1810	0.1506	0.1510	2.6429
	0.9	5	cicov	0.9486	0.9352	0.9978	0.9972	0.9936
			avelen	2.6679	2.2152	2.1943	2.2014	2.7952

CHAPTER 6

CONCLUSIONS

Let p be fixed and $n \to \infty$. For forward selection, PCR, PLS, ridge regression, relaxed lasso, and lasso, if $P(d \to p) \to 1$ as $n \to \infty$ then the six methods are asymptotically equivalent to the OLS full model, and the PIs (3.11) and (3.12) are asymptotically optimal on a large class of iid unimodal error distributions. For PCR and some constants θ_i, $\sum_{i=1}^{j} \theta_i \gamma_i^T \boldsymbol{x}_i = \sum_{i=1}^{p} \beta_i x_i$ if $j = p$, but not if $j < p$ in general. Hence PCR tends to give inconsistent estimators unless P($j = p$) = P(PCR uses the full OLS model) goes to one. Forward selection with C_p produces a $\sqrt{n}$ consistent estimator $\hat{\boldsymbol{\beta}}_{I_{min},0}$ of $\boldsymbol{\beta}$. Using $d = \min(\lceil n/J \rceil, p)$ with forward selection, PCR, PLS, ridge regression, lasso, and relaxed lasso makes large sample inference easy since the selected model is the full OLS model if $n/p \geq J$.

There is massive literature on variable selection and a fairly large literature for inference after variable selection. See, for example, Bertsimas, King, and Mazumder (2016), Fan and Lv (2010), Ferrari and Yang (2015), Fithian, Sun, and Taylor (2014), Hjort and Claeskins (2003), Knight and Fu (2000), Lee, Sun, Sun, and Taylor (2016), Leeb and Pötscher (2006), Lockhart, Taylor, Tibshirani, and Tibshirani (2014), Qi, Luo, Carroll, and Zhao (2015), and Taylor, Lockhart, Tibshirani, and Tibshirani (2014).

If n/p is large, the residual bootstrap with OLS residuals should work for lasso, relaxed lasso, and ridge regression if $\hat{\lambda}_{1,n} = o_P(\sqrt{n})$. Also see Knight and Fu (2000). Camponovo (2015) suggests that the nonparametric bootstrap does not work for lasso. Chatterjee and

Lahiri (2011) state that the residual bootstrap with lasso does not work. Hall, Lee, and Park (2009) show that the residual bootstrap with full model OLS residuals does not work, but the m out of n residual bootstrap with OLS full model residuals does work. Rejchel (2016) is a good review of lasso theory. Fan and Lv (2010) review large sample theory for some alternative methods. See Lockhart, Taylor, Tibshirani, and Tibshirani (2014) for a partial remedy for hypothesis testing with lasso. Xu, Caramanis, and Mannor (2011) suggest that sparse algorithms are not stable.

Lei, G'Sell, Rinaldo, Tibshirani, and Wasserman (2016) and Wasserman (2014) suggest prediction intervals for estimators such as lasso. Also see Butler and Rothman (1980). Steinberger and Leeb (2016) use leave-one-out residuals to make a PI. Chao, Ning, and Liu (2014), assume that the e_i are iid $N(0, \sigma^2)$. Denham (1997) gave a PI for PLS when the number of PLS components V_j is selected in advance. Zhang (1992) has some k–fold CV theory.

With n/p large, C_p produced good PIs for forward selection and 10-fold CV produced good PIs for PCR and PLS. For lasso and ridge regression, 10-fold CV produced good PIs if $\psi = 0$ or if k was small. If k was larger than about 18 and the predictors were highly correlated, 10-fold CV tended to underfit and the PI lengths were too long.

When n/p is not large, inference is currently much more difficult. Zheng and Loh (1995) show that BIC_S can work if $p = o(\log(n))$ and there is a consistent estimator of σ^2. Chun and Keleş (2010) show that PLS does not give a consistent estimator of $\boldsymbol{\beta}$ unless $p/n \to 0$. Also see Cook, Helland, and Su (2013). Fan and Lv (2010) give large sample theory for some methods if $p = o(n^{1/5})$. Leeb, Pötscher, and Ewald (2015) suggests that the method Berk et al. (2013) method does not really work. Also see Dezeure et al. (2015), Javanmard and Montanari (2014), Taylor et al. (2014), and van de Geer et al. (2014).

Response plots of the fitted values $\hat{Y}$ versus the response Y are useful for checking linearity of the MLR model and for detecting outliers. Residual plots should also be made. When n is large, the points within the pointwise PI bands can be omitted, eliminating a black band about the identity line.

The simulations were done in *R*. See R Core Team (2016). A much larger simulation study is in Pelawa Watagoda (2017). We used several *R* functions including forward selection as computed with `regsubsets` function from the `leaps` library, principal components regression with the `pcr` function and partial least squares with the `plsr` function from the `pls` library, and ridge regression and lasso with the `glmnet` and `cv.glmnet` functions from the `glmnet` library.

The collection of Olive (2017d) *R* functions *slpack*, available from (http://lagrange.math.siu.edu/Olive/slpack.txt), has some useful functions for the inference. Table 5.301 was made with `mspisim` while Table 5.302 was made with `regbootsim` for the OLS full model and `vsbootsim3` for forward selction. The function `lassobotsim3` uses the prediction region method for lasso. For PI (3.12), the function `valvspisim` is for forward selection using the minimum C_p model, and the function `valrelpisim` simulates the relaxed lasso model corresponding to the lasso model chosen with 10-fold CV.

REFERENCES

[1] Akaike, H. (1973), "Information Theory as an Extension of the Maximum Likelihood Principle," in *Proceedings, 2nd International Symposium on Information Theory*, eds. Petrov, B.N., and Csakim F., Akademiai Kiado, Budapest, 267-281.

[2] Berk, R., Brown, L., Buja, A., Zhang, K., and Zhao, L. (2013), "Valid Post-Selection Inference," *The Annals of Statistics,* 41, 802-837.

[3] Bertsimas, D., King, A., and Mazumder, R. (2016), "Best Subset Selection Via a Modern Optimizations Lens," *Annals of Statistics*, to appear.

[4] Bickel, P.J., and Ren, J.–J. (2001), "The Bootstrap in Hypothesis Testing," in *State of the Art in Probability and Statistics: Festschrift for William R. van Zwet*, eds. de Gusnt, M., Klaassen, C., and van der Vaart, A., The Institute of Mathematical Statistics, Hayward, CA, 91-112.

[5] Burnham, K.P., and Anderson, D.R. (2004), "Multimodel Inference Understanding AIC and BIC in Model Selection," *Sociological Methods* & *Research*, 33, 261-304.

[6] Butler, R., and Rothman, E. (1980), "Predictive Intervals Based on Reuse of the Sample," *Journal of the American Statistical Association,* 75, 881-889.

[7] Camponovo, L. (2015), "On the Validity of the Pairs Bootstrap for Lasso Estimators," *Biometrika,* 102, 981-987.

[8] Chao, S.-K., Ning, Y., and Liu, H. (2014), "On High Dimensional Post-Regularization Prediction Intervals," unpublished manuscript at (http://www.stat.purdue.edu/∼skchao74/HD_PCI.pdf).

[9] Chatterjee, A., and Lahiri, S.N. (2011), "Bootstrapping Lasso Estimators," *Journal of the American Statistical Association*, 106, 608-625.

[10] Chun, H. and S. Keleş (2010), "Sparse Partial Least Squares Regression for Simultaneous Dimension Reduction and Predictor Selection," *Journal of the Royal Statistical Society, B,* 72, 3-25.

[11] Cook, R.D., Helland, I.S., and Su, Z. (2013), "Envelopes and Partial Least Squares Regression," *Journal of the Royal Statistical Society, B*, 75, 851-877.

[12] Denham, M.C., (1997), "Prediction Intervals in Partial Least Squares," *Journal of Chemometrics,* 11, 39-52.

[13] Dezeure, R., Bühlmann, P., Meier, L., and Meinshausen, N. (2015), High-Dimensional Inference: Confidence Intervals, p-Values and R-Software hdi," *Statistical Science*, 30, 533-558.

[14] Efron, B. (1982), *The Jackknife, the Bootstrap and Other Resampling Plans,* SIAM, Philadelphia, PA.

[15] Efron, B. (2014), "Estimation and Accuracy After Model Selection," (with discussion), *Journal of the American Statistical Association,* 109, 991-1007.

[16] Efron, B., and Hastie, T. (2016), *Computer Age Statistical Inference*, Cambridge University Press, New York, NY.

[17] Fan, J. and Lv, J. (2010), "A Selective Overview of Variable Selection in High Dimensional Feature Space," *Statistica Sinica*, 20, 101-148.

[18] Ferrari, D., and Yang, Y. (2015), "Confidence Sets for Model Selection by F–Testing," *Statistica Sinica*, 25, 1637-1658.

[19] Fithian, W., Sun, D., and Taylor, J. (2014), "Optimal Inference After Model Selection," ArXiv e-prints .

[20] Frey, J. (2013), "Data-Driven Nonparametric Prediction Intervals," *Journal of Statistical Planning and Inference,* 143, 1039-1048.

[21] Friedman, J., Hastie, T., and Tibshirani, R. (2010), "Regularization Paths for Generalized Linear Models Via Coordinatewise Descent," *Journal of Statistical Software,* 33, 1-22.

[22] Gunst, R.F., and Mason, R.L. (1980), *Regression Analysis and Its Application,* Marcel Dekker, New York, NY.

[23] Hall, P. (1988), "Theoretical Comparisons of Bootstrap Confidence Intervals," (with discussion), *The Annals of Statistics*, 16, 927-985.

[24] Hall, P., Lee, E.R., and Park, B.U. (2009), "Bootstrap-Based Penalty Choice for the Lasso Achieving Oracle Performance," *Statistica Sinica*, 19, 449-471.

[25] Hastie, T., Tibshirani, R., and Wainwright, M. (2015), *Statistical Learning with Sparsity: the Lasso and Generalizations*, CRC Press Taylor & Francis, Boca Raton, FL.

[26] Hebbler, B. (1847), "Statistics of Prussia," *Journal of the Royal Statistical Society, A*, 10, 154-186.

[27] Hjort, N.L., and Claeskins, G. (2003), "Frequentist Model Average Estimators," *Journal of the American Statistical Association,* 98, 879-899.

[28] Hoerl, A.E., and Kennard, R. (1970), "Ridge Regression: Biased Estimation for Nonorthogonal Problems," *Technometrics*, 12, 55-67.

[29] James, G., Witten, D., Hastie, T., and Tibshirani, R. (2013), *An Introduction to Sta-*

tistical Learning With Applications in R, Springer, New York, NY.

[30] Javanmard, A., and Montanari, A. (2014), "Confidence Intervals and Hypothesis Testing for High-Dimensional Regression," *Journal of Machine Learning Research*, 15, 2869-2909.

[31] Knight, K., and Fu, W.J. (2000), "Asymptotics for Lasso-Type Estimators," *Annals of Statistics*, 28, 1356–1378.

[32] Lee, J., Sun, D., Sun, Y., and Taylor, J. (2016), "Exact Post–Selection Inference, with Application to the Lasso," *Annals of Statistics,* to appear.

[33] Leeb, H., and Pötscher, B.M. (2006), "Can One Estimate the Conditional Distribution of Post–Model-Selection Estimators?" *The Annals of Statistics*, 34, 2554-2591.

[34] Leeb, H., Pötscher, B.M., and Ewald, K. (2015), "On Various Confidence Intervals Post-Model-Selection," *Statistical Science*, 30, 216-227.

[35] Lei, J., G'Sell, M., Rinaldo, A., Tibshirani, R.J., and Wasserman, L. (2016), "Distribution-Free Predictive Inference for Regression," unpublished document at (http://www.stat.cmu.edu/∼ryantibs/papers/conformal.pdf).

[36] Lockhart, R., Taylor, J., Tibshirani, R. and Tibshirani, R. (2014), "A Significance Test for the Lasso," with discussion, *Annals of Statistics,* 42, 413–468.

[37] Luo, S., and Chen, Z. (2013), "Extended BIC for Linear Regression Models With Diverging Number of Relevant Features and High or Ultra-High Feature Spaces," *Journal of Statistical Planning and Inference,* 143, 494-504.

[38] Machado, J.A.F., and Parente, P. (2005), "Bootstrap Estimation of Covariance Matrices Via the Percentile Method," *Econometrics Journal,* 8, 70–78.

[39] Meinshausen, N. (2007), "Relaxed Lasso," *Computational Statistics* & *Data Analysis*, 52, 374-393.

[40] Nishi, R. (1984), "Asymptotic Properties of Criteria for Selection of Variables in Multiple Regression," *Annals of Statistics,* 12, 758-765.

[41] Olive, D.J. (2013), "Asymptotically Optimal Regression Prediction Intervals and Prediction Regions for Multivariate Data," *International Journal of Statistics and Probability*, 2, 90-100.

[42] Olive, D.J. (2017a), "Applications of Hyperellipsoidal Prediction Regions," *Statistical Learning*, to appear, see (http://lagrange.math.siu.edu/Olive/pphpr.pdf).

[43] Olive, D.J. (2017b), *Robust Multivariate Analysis*, Springer, New York, NY, to appear.

[44] Olive, D.J. (2017c), *Linear Regression*, Springer, New York, NY, to appear.

[45] Olive, D.J. (2017d), *Prediction and Statistical Learning*, online course notes, see (http://lagrange.math.siu.edu/Olive/slearnbk.htm).

[46] Olive, D.J. (2017e), "Bootstrapping Hypothesis Tests," unpublished manuscript, (http://lagrange.math.siu.edu/Olive/ppvselboot.pdf).

[47] Olive, D.J., and Hawkins, D.M. (2003), "Robust Regression with High Coverage," *Statistics* & *Probability Letters,* 63, 259-266.

[48] Olive, D.J., and Hawkins, D.M. (2005), "Variable Selection for 1D Regression Models," *Technometrics*, 47, 43-50.

[49] Pelawa Watagoda, L.C.R. (2017), *Simulation for Inference After Variable Selection*, unpublished manuscript.

[50] Qi, X., Luo, R., Carroll, R.J., and Zhao, H. (2015), "Sparse Regression by Projection

and Sparse Discriminant Analysis," *Journal of Computational and Graphical Statistics,* 24, 416-438.

[51] R Core Team (2016), "R: a Language and Environment for Statistical Computing," R Foundation for Statistical Computing, Vienna, Austria, (www.R-project.org).

[52] Rejchel, W. (2016), "Lasso With Convex Loss: Model Selection Consistency and Estimation," *Communications in Statistics: Theory and Methods,* 45, 1989-2004.

[53] Schwarz, G. (1978), "Estimating the Dimension of a Model," *The Annals of Statistics,* 6, 461-464.

[54] Seber, G.A.F., and Lee, A.J. (2003), *Linear Regression Analysis,* 2nd ed., Wiley, New York, NY.

[55] Steinberger, L., and Leeb, H. (2016), "Leave-One-Out Prediction Intervals in Linear Regression Models With Many Variables," unpublished manuscript at (https://arxiv.org/pdf/1602.05801.pdf).

[56] Su, Z., and Cook, R.D. (2012), "Inner Envelopes: Efficient Estimation in Multivariate Linear Regression," *Biometrika*, 99, 687-702.

[57] Taylor, J., Lockhart, R., Tibshirani, R., and Tibshirani, R. (2014), "Post-Selection Adaptive Inference for Least Angle Regression and the Lasso," arXiv: 1401.3889; submitted.

[58] Tibshirani, R. (1996), "Regression Shrinkage and Selection Via the Lasso," *Journal of the Royal Statistical Society, B*, 58, 267-288.

[59] Tibshirani, R.J. (2015), "Degrees of Freedom and Model Search," *Statistica Sinica*, 25, 1265-1296.

[60] Tibshirani, R., Bien, J., Friedman, J., Hastie, T., Simon, N., Taylor, J., and Tibshirani, R.J. (2012), "Strong Rules for Discarding Predictors in Lasso-type Problems," *Journal of the Royal Statistical Society, B,* 74, 245-266.

[61] van de Geer, S., Bülhmann, P. Ritov, Y., and Dezeure, R. (2014), "On Asymptotically Optimal Confidence Regions and Tests for High-Dimensional Models," *The Annals of Statistics*, 42, 1166-1202.

[62] Wasserman, L. (2014), "Discussion: A Significance Test for the Lasso," *The Annals of Statistics,* 42, 501-508.

[63] Wold, H. (1975), "Soft Modelling by Latent Variables: the Nonlinear Partial Least Squares (NIPALS) Approach," in *Perspectives in Probability and Statistics, Papers in Honor of M.S. Bartlett,* ed. Gani, J., Academic Press, San Diego, CA, 117-144.

[64] Xu, H., Caramanis, C., and Mannor, S. (2011), "Sparse Algorithms are Not Stable: a No-Free-Lunch Theorem," *IEEE Transactions on Pattern Analysis and Machine Intelligence,* PP(99), 1-9.

[65] Zhang, P. (1992), "On the Distributional Properties of Model Selection Criterion," *Journal of the American Statistical Association*, 87, 732-737.

[66] Zheng, Z., and Loh, W.-Y. (1995), "Consistent Variable Selection in Linear Models," *Journal of the American Statistical Association*, 90, 151-156.

VITA

Graduate School
Southern Illinois University

Lasanthi C. R. Pelawa Watagoda Date of Birth: November 07, 1985

1457 West Lake Road, Apt 04, Murphysboro, Illinois 62966

lasanthi@siu.edu (lasanthi@appstate.edu)

Southern Illinois University Carbondale
Master of Science, Mathematics, August 2013

University of Sri Jayewardenepura Sri Lanka
Bachelor of Science(Special), Mathematics, July 2010

Special Honors and Awards: Dissertation Research Assistantship Award 2017.
John M. H. Olmsted Award- Ph.D. Teaching Assistant Award for outstanding teaching performance, Department of Mathematics at SIU - 2015.

Research Paper Title:

Inference After Variable Selection.

Major Professor: Dr. D. J. Olive

Publications:

1. "Bootstrapping analogs of the Hotelling's T^2 test", Communications in Statistics: Theory and Methods, to appear, with Hasthika Rupasinghe.
2. "Visualizing and Testing the Multivariate Linear Regression Model", International Journal of Statistics and Probability January 22, 2015, with David J Olive and Hasthika Rupasinghe.
3. "Inference For Multiple Linear Regression After Model or Variable Selection", work in progress, with David J. Olive.